

EVERETT
DIGEST 152 • APRIL 1970
SQUARE D COMPANY



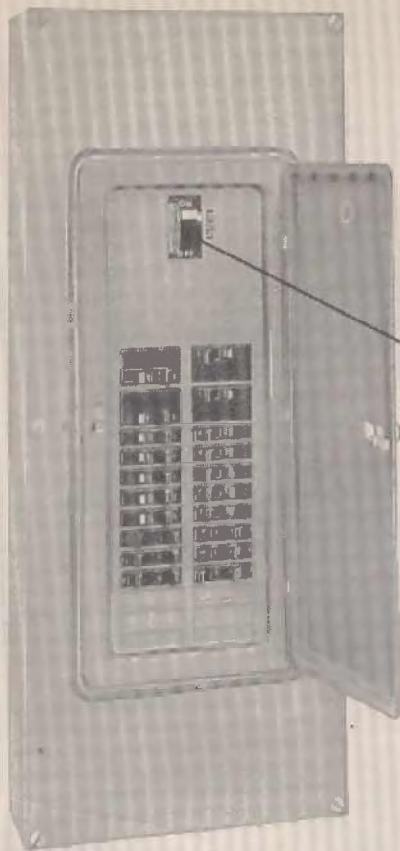
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* For information please contact your local Square D Field Office.

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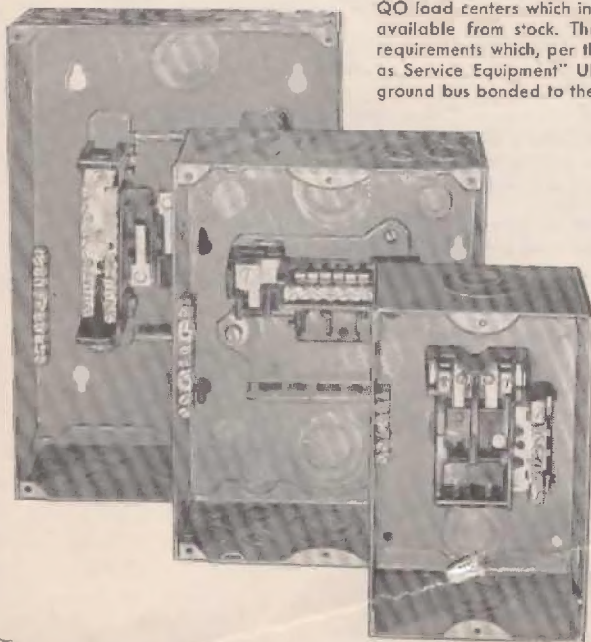
Now . . .

**125-225A MAIN BREAKER
WITH VISI-TRIP[®] INDICATOR**



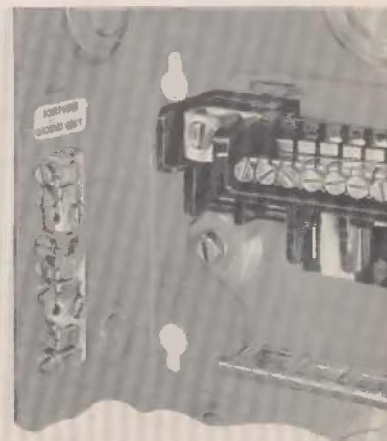
The same exclusive feature of the QO breaker has now been added to type Q2 main breakers. Visible only when the breaker is tripped, the bright red indicator disappears when the breaker is reset and service is restored.

**Service Entrance Devices for
Mobile homes and travel trailers**



QO load centers which include a factory installed equipment ground bus are now available from stock. They are especially suited to Mobile Home load center requirements which, per the NEC Article 550-4, para. A, must contain a "Suitable as Service Equipment" UL label, an insulated neutral and a separate equipment ground bus bonded to the load center box.

See Page 5 for complete listing.



QO® CIRCUIT BREAKERS

FOR USE IN QO LOAD CENTERS

5,000 A.I.C.

PLUG-ON 5,000 AMPERES RMS — U.L. Listed Interrupting Capacity Identification — Black Handle

SINGLE POLE

Amp.	Cat. No.	Price
15	QO115	\$3.30
20	QO120	3.30
25	QO125	3.30
30	QO130	3.30
35	QO135	3.30
40	QO140	3.30
45	QO145	3.30
50	QO150	3.30

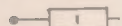
1 Space Required

HIGH MAGNETIC

Amp.	Cat. No.	Price
15	QO115HM	\$3.30
20	QO120HM	3.30

1 Space Required

QO with
VISI-TRIP
120/240 V. AC



TWO POLE — COMMON TRIP

Amp.	120/240 V. AC		240 V. AC	
	Cat. No.	Price	Cat. No.	Price
15	QO215	\$ 7.70	*QO215H	\$16.10
20	QO220	7.70	*QO220H	16.10
25	QO225	7.70	*QO225H	16.10
30	QO230	7.70	*QO230H	16.10
35	QO235	7.70	*QO235H	16.10
40	QO240	7.70	*QO240H	16.10
45	QO245	7.70	*QO245H	16.10
50	QO250	7.70	*QO250H	16.10
60	QO260	7.70		
70	QO270	15.60		

2 Spaces Required

70		*Q1-270	\$21.10
80		*Q1-280	21.10
90		*Q1-290	21.10
100		*Q1-2100	21.10

4 Spaces Required

QO with
VISI-TRIP



TYPE
Q1

High magnetic trip breakers are recommended for area lighting (athletic fields, parking lots, outdoor signs, etc.) when using tungsten filament lamps of inherent high inrush current and individual room dimmer applications.

*Approved for use on 3Ø Grounded "B" systems. QO have green handles — same breakers as listed on Page 3.

THREE POLE — COMMON TRIP

Amp.	Cat. No.	Price	Delta	
			Cat. No.	Price
15	QO315	\$26.30	QO315D	\$26.30
20	QO320	26.30	QO320D	26.30
25	QO325	26.30		
30	QO330	26.30	QO330D	26.30
35	QO335	26.30		
40	QO340	26.30	QO340D	26.30
45	QO345	26.30		
50	QO350	26.30	QO350D	26.30
60	QO360	26.30		

3 Spaces Required

70	Q1-370	\$39.00	Q1-370D	\$39.00
80	Q1-380	39.00		
90	Q1-390	39.00		
100	Q1-3100	39.00	Q1-3100D	39.00

6 Spaces Required

QO with
VISI-TRIP
240 V. AC



TYPE Q1
240 V. AC

CIRCUIT BREAKER WIRE SIZES

QO	QOT	Q1	Aluminum	Copper
15-30			#12-8 AWG	#14-8 AWG
40-60			#8-4 AWG	#8-4 AWG
60-70			#6-4 AWG	#6-4 AWG
	15-30		#12-8 AWG	#14-8 AWG
		70-100	#4-0 AWG	#6-0 AWG

CIRCUIT LIMITING — QOT TANDEM BREAKERS

120/240 V. AC

SINGLE POLE

Amp.	Cat. No.	Price
15 & 15	QOT1515	\$6.60
15 & 20	QOT1520	6.60
20 & 20	QOT2020	6.60
20 & 30	QOT2030	6.60
25 & 25	QOT2525	6.60
30 & 30	QOT3030	6.60

1 Space Required

TWO POLE

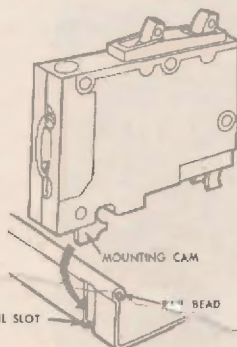
Amp.	Cat. No.	Price
15 & 15	QOT21515	\$13.20
15 & 20	QOT21520	13.20
20 & 20	QOT22020	13.20
20 & 30	QOT22030	13.20
30 & 30	QOT23030	13.20

Individual trip

2 Spaces Required

QOT Tandem Breakers have a mounting cam as shown. Installation into a QO Load Center can only be made in those positions having a mounting pan rail slot. Meets Par. 384-15 of N.E.C. U.L. listed as Class CTL.

Refer to listing on page 3 for replacement Tandem Breakers to be used in old-style Non-CTL devices.



**QO COSTS NO MORE . . .
WHY SETTLE FOR LESS?**



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QO® CIRCUIT BREAKERS

FOR USE IN QO LOAD CENTERS

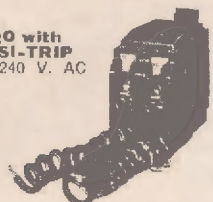
PLUG-ON

5,000 A.I.C.

5,000 AMPERES RMS — U.L. Listed Interrupting Capacity Identification — Black Handle


TWO POLE — COMMON TRIP

Water Heater

QO with VISI-TRIP 120/240 V. AC			
	Amp.	Cat. No.	Price
	15	QO215WH	\$8.30
	20	QO220WH	8.30
	30	QO230WH	8.30
2 Spaces Required			

SWITCH NEUTRAL — COMMON TRIP


N.E.C. 514-5

QO with VISI-TRIP 2 Wire 120 V. AC			
	Amp.	Cat. No.	Price
	15	QO215SWN	\$10.40
	20	QO220SWN	10.40
	30	QO230SWN	10.40
2 Spaces Required			

REPLACEMENT TANDEM BREAKERS

For Use in Old Style Non-Class CTL QO Load Centers

Amp.	SINGLE POLE		TWO POLE	
	Cat. No.	Price	Cat. No.	Price
15 & 15	QO1515	\$7.10	QO21515	\$14.20
15 & 20	QO1520	7.10	QO21520	14.20
20 & 20	QO2020	7.10	QO22020	14.20
30 & 30	QO3030	7.10	QO23030	14.20


QO with VISI-TRIP 3 Wire 120/240 V. AC			
	Amp.	Cat. No.	Price
	15	QO315SWN	\$15.30
	20	QO320SWN	15.30
	30	QO330SWN	15.30
3 Spaces Required			

PLUG-ON

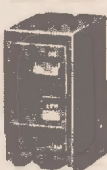
10,000 A.I.C.

10,000 AMPERES RMS — U.L. Listed Interrupting Capacity Identification — Green Handle


SINGLE POLE


QO with VISI-TRIP 120/240 V. AC			
	Amp.	Cat. No.	Price
	15	QO115H	\$6.60
	20	QO120H	6.60
	25	QO125H	6.60
	30	QO130H	6.60
1 Space Required			


TWO POLE — COMMON TRIP

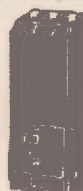
QO with VISI-TRIP 120/240 V. AC			
	Amp.	Cat. No.	Price
	15	QO215H	\$16.10
	20	QO220H	16.10
	25	QO225H	16.10
	30	QO230H	16.10
2 Spaces Required			

THREE POLE — COMMON TRIP

QO with VISI-TRIP 240 V. AC			
	Amp.	Cat. No.	Price
	15	QO315H	\$26.30
	20	QO320H	26.30
	25	QO325H	26.30
	30	QO330H	26.30
3 Spaces Required			

TYPE Q1 120/240 V. AC			
	Amp.	Cat. No.	Price
	35	Q1-135H	\$7.50
	40	Q1-140H	7.50
	45	Q1-145H	7.50
	50	Q1-150H	7.50
	60	Q1-160H	7.50
	70	Q1-170H	9.50
	80	Q1-180H	9.50
	90	Q1-190H	9.50
	100	Q1-1100H	9.50
2 Spaces Required			

TYPE Q1 120/240 V. AC			
	Amp.	Cat. No.	Price
	35	Q1-235H	\$16.10
	40	Q1-240H	16.10
	45	Q1-245H	16.10
	50	Q1-250H	16.10
	60	Q1-260H	16.10
	70	Q1-270H	36.10
	80	Q1-280H	36.10
	90	Q1-290H	36.10
	100	Q1-2100H	36.10
4 Spaces Required			


TYPE Q1 240 V. AC			
	Amp.	Cat. No.	Price
	35	Q1-335H	\$26.30
	40	Q1-340H	26.30
	45	Q1-345H	26.30
	50	Q1-350H	26.30
	60	Q1-360H	26.30
	70	Q1-370H	39.00
	80	Q1-380H	39.00
	90	Q1-390H	39.00
	100	Q1-3100H	39.00
6 Spaces Required			

PLUG-ON


75,000 A.I.C.

75,000 AMPERE RMS (Asym.); 65,000 AMPERES RMS (Sym.) — U.L. Listed Interrupting Capacity Identification — Gray Handle


SINGLE POLE

TYPE QH with VISI-TRIP 120/240 V. AC			
	Amp.	Cat. No.	Price
	15	QH115	\$12.30
	20	QH120	12.30
	25	QH125	12.30
	30	QH130	12.30
1 Space Required			

TWO POLE — COMMON TRIP

TYPE QH with VISI-TRIP 120/240 V. AC			
	Amp.	Cat. No.	Price
	15	QH215	\$30.10
	20	QH220	30.10
	25	QH225	30.10
	30	QH230	30.10
2 Spaces Required			

THREE POLE — COMMON TRIP

TYPE QH with VISI-TRIP 240 V. AC			
	Amp.	Cat. No.	Price
	15	QH315	\$53.00
	20	QH320	53.00
	25	QH325	53.00
	30	QH330	53.00
3 Spaces Required			



VISI-TRIP is a Registered Trademark of Square D Company

SCHEDULE B DISCOUNT

PAGE 3

QF® FUSIBLE PLUG-IN UNIT

FOR USE IN QO LOAD CENTERS

QF PLUG-IN UNITS

For Use With Type G (Formerly Type SC) Fuses

Ampere Rating	TANDEM SINGLE POLE 120 V. AC				TANDEM TWO POLE 240 V. AC				TWO POLE 240 V. AC			
	Space Req'd.	Cat. No.	Std. HP Rating	Price	Space Req'd.	Cat. No.	Std. HP Rating	Price	Space Req'd.	Cat. No.	Std. HP Rating	Price
15 & 15	1	QF1515	1/4	\$3.80	2	QF21515	1/2	\$10.20	2	QF230	1 1/2	\$5.10
15 & 20	1	QF1520	1/4-3/4	3.80	2	QF21520	1/2-3/4	10.20	2	QF230	1 1/2	\$5.10
20 & 20	1	QF2020	3/4	3.80	2	QF22020	3/4	10.20	2	QF230	1 1/2	\$5.10
30	1	QF3030	1	3.80	2	QF23030	1	10.20	2	QF230	1 1/2	\$5.10
60	1	QF6060	2	3.80	2	QF26060	2	10.20	2	QF230	1 1/2	\$5.10

Above QF units meet Federal Specification W-F-870a, Type II.

QO® BREAKER PRICE TABLE

PRICE TABLE IS BASED ON USE OF QO AND Q1 BREAKERS HAVING 5000 A.I.C. AND TANDEM QOT (CLASS CTL) BREAKERS.

The breaker table indicates complete price of single and common trip two pole circuits (60 A. max.)
For each 70 and 100 amp. two pole Q1 add \$13.40 list. For each 70 amp. two pole QO add \$7.90 list.

QO CIRCUIT BREAKER SELECTION AND PRICE

No. of Single Poles QO/QOT	Number of Common Trip 120/240 V. Two Poles (60 A. Max.)														
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
0	\$	\$ 7.70	\$15.40	\$23.10	\$30.80	\$38.50	\$46.20	\$53.90	\$61.60	\$69.30	\$77.00	\$84.70	\$92.40	\$100.10	\$107.80
1	3.30	11.00	18.70	26.40	34.10	41.80	49.50	57.20	64.90	72.60	80.30	88.00	95.70	103.40	111.10
2	6.60	14.30	22.00	29.70	37.40	45.10	52.80	60.50	68.20	75.90	83.60	91.30	99.00	106.70	114.40
3	9.90	17.60	25.30	33.00	40.70	48.40	56.10	63.80	71.50	79.20	86.90	94.60	102.30	110.00	117.70
4	13.20	20.90	28.60	36.30	44.00	51.70	59.40	67.10	74.80	82.50	90.20	97.90	105.60	113.30	121.00
5	16.50	24.20	31.90	39.60	47.30	55.00	62.70	70.40	78.10	85.80	93.50	101.20	108.90	116.60	124.30
6	19.80	27.50	35.20	42.90	50.60	58.30	66.00	73.70	81.40	89.10	96.80	104.50	112.20	119.90	127.60
7	23.10	30.80	38.50	46.20	53.90	61.60	69.30	77.00	84.70	92.40	100.10	107.80	115.50	123.20	130.90
8	26.40	34.10	41.80	49.50	57.20	64.90	72.60	80.30	88.00	95.70	103.40	111.10	118.80	126.50	134.20
9	29.70	37.40	45.10	52.80	60.50	68.20	75.90	83.60	91.30	99.00	106.70	114.40	122.10	129.80	137.50
10	33.00	40.70	48.40	56.10	63.80	71.50	79.20	86.90	94.60	102.30	110.00	117.70	125.40	133.10	140.80
11	36.30	44.00	51.70	59.40	67.10	74.80	82.50	90.20	97.90	105.60	113.30	121.00	128.70	136.40	144.10
12	39.60	47.30	55.00	62.70	70.40	78.10	85.80	93.50	101.20	108.90	116.60	124.30	132.00	139.70	147.40
13	42.90	50.60	58.30	66.00	73.70	81.40	89.10	96.80	104.50	112.20	119.90	127.60	135.30	143.00	150.70
14	46.20	53.90	61.60	69.30	77.00	84.70	92.40	100.10	107.80	115.50	123.20	130.90	138.60	146.30	154.00
15	49.50	57.20	64.90	72.60	80.30	88.00	95.70	103.40	111.10	118.80	126.50	134.20	141.90	149.60	157.30
16	52.80	60.50	68.20	75.90	83.60	91.30	99.00	106.70	114.40	122.10	129.80	137.50	145.20	152.90	160.60
17	56.10	63.80	71.50	79.20	86.90	94.60	102.30	110.00	117.70	125.40	133.10	140.80	148.50	156.20	163.90
18	59.40	67.10	74.80	82.50	90.20	97.90	105.60	113.30	121.00	128.70	136.40	144.10	151.80	159.50	167.20
19	62.70	70.40	78.10	85.80	93.50	101.20	108.90	116.60	124.30	132.00	139.70	147.40	155.10	162.80	170.50
20	66.00	73.70	81.40	89.10	96.80	104.50	112.20	119.90	127.60	135.30	143.00	150.70	158.40	166.10	173.80
21	69.30	77.00	84.70	92.40	100.10	107.80	115.50	123.20	130.90	138.60	146.30	154.00	161.70	169.40	177.10
22	72.60	80.30	88.00	95.70	103.40	111.10	118.80	126.50	134.20	141.90	149.60	157.30	165.00	172.70	180.40
23	75.90	83.60	91.30	99.00	106.70	114.40	122.10	129.80	137.50	145.20	152.90	160.60	168.30	176.00	183.70
24	79.20	86.90	94.60	102.30	110.00	117.70	125.40	133.10	140.80	148.50	156.20	163.90	171.60	179.30	187.00
25	82.50	90.20	97.90	105.60	113.30	121.00	128.70	136.40	144.10	151.80	159.50	167.20	174.90	182.60	190.30
26	85.80	93.50	101.20	108.90	116.60	124.30	132.00	139.70	147.40	155.10	162.80	170.50	178.20	185.90	193.60
27	89.10	96.80	104.50	112.20	119.90	127.60	135.30	143.00	150.70	158.40	166.10	173.80	181.50	189.20	196.90
28	92.40	100.10	107.80	115.50	123.20	130.90	138.60	146.30	154.00	161.70	169.40	177.10	184.80	192.50	200.20
29	95.70	103.40	111.10	118.80	126.50	134.20	141.90	149.60	157.30	165.00	172.70	180.40	188.10	195.80	203.50
30	99.00	106.70	114.40	122.10	129.80	137.50	145.20	152.90	160.60	168.30	176.00	183.70	191.40	199.10	206.80

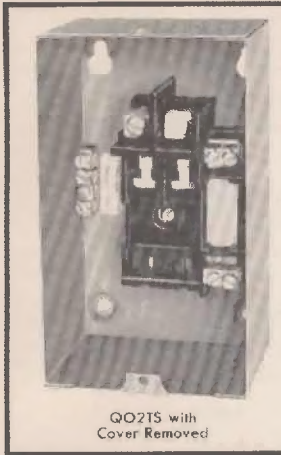


QO® LOAD CENTERS

FOR QO CIRCUIT BREAKERS OR QF FUSIBLE UNITS

MOBILE HOME AND TRAILER LOAD CENTERS

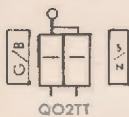
These load centers have a factory installed equipment ground bus. They conform with Mobile Home Manufacturers Association and Trailer Coach Association standards.



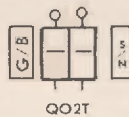
QO2TS with Cover Removed

Mains Rating Amps	Spaces	Max. No. Single Poles	Type of Enclosure	Use With	Box, Interior and Cover ★ Without Door		Main Wire Size AWG/MCM		Box No.
					Cat. No.	Price	CU	AL	
1 PHASE — 2 WIRE LUGS ONLY									
40	2	2	Indoor	QO	QO2TTS QO2TTF	\$ 5.20 6.10	14-6	12-6	1 2
70	2	4		QO/QOT	QO2-4ATTF/S	7.60	14-4	12-2	2
1 PHASE — 3 WIRE LUGS ONLY									
40	2	2	Indoor	QO	QO2TS QO2TF	5.20 6.10	14-6	12-6	1 2
70	2	4		QO/QOT	QO2-4ATF/S	7.60	14-4	12-2	2
100	6	12		QO/QOT	QO6-12TF/S	8.80	6-1		4
100	6	12		QO/QOT, QF	QO6-12DTF/S	10.30			5
125	8	16		QO/QOT	QO8-16TF/S	14.10	10-0		6
125	8	16		QO/QOT, QF	QO8-16DTF/S	15.60			

★ Cover included with device. Order F for Flush, S for Surface. Covers on QO6-12DTF/S and QO8-16DTF/S devices have a door.
◆ Box Dimensions on Page 14.



QO2TT



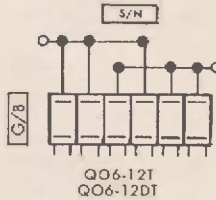
QO2T



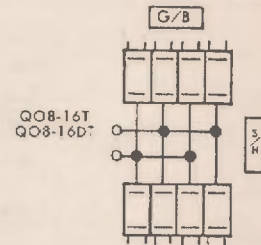
QO2-4ATT



QO2-4AT



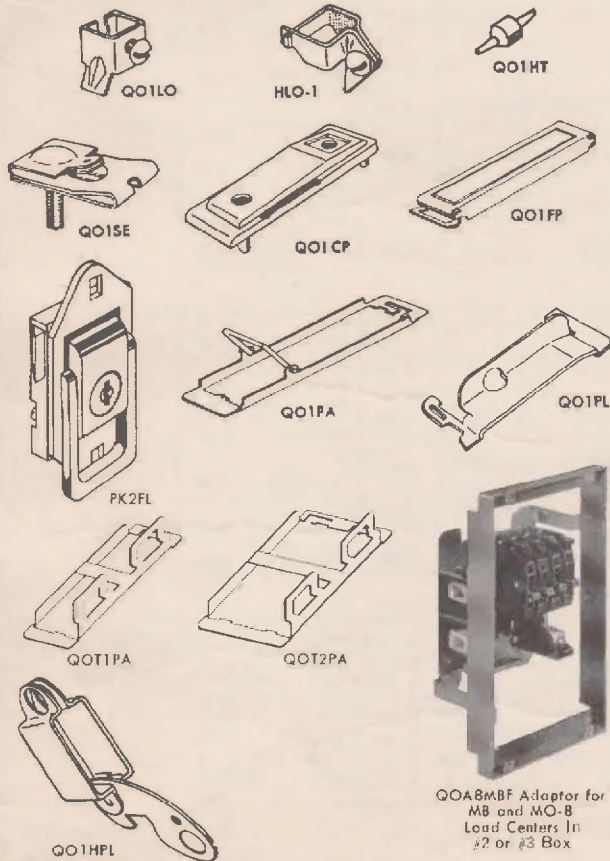
QO6-12T
QO6-12DT



QO8-16T
QO8-16DT

ACCESSORIES

Description	Cat. No.	Price
Handle Tie: Convert any two adjacent single pole QO or QOT poles to independent trip two pole.	QO1HT	\$.20
Closure Plate: Fills opening in cover if old style (not shutter type) twist-out is removed in error or if breaker is eliminated.	QO1CP	.50
Filler Plate: Fills opening in blanked out type QO covers and shutter type twistout cover opening if twistout is removed in error.	QO1FP	.20
Handle Lock-Off: Clip for fixing QO single pole handle in "ON" or "OFF" position.	QO1LO	.30
Handle Lock-Off: Clip for fixing QO, QOT or QF either 1, 2 or 3 pole breaker handles in "ON" or "OFF" position.	HLO-1	.90
Handle Padlock Attachment: For padlocking one pole QO breaker in "ON" or "OFF" position.	QO1PA	1.00
Handle Padlock Attachment: For padlocking one pole QOT breaker in "ON" or "OFF" position.	QOT1PA	1.30
Handle Padlock Attachment: For padlocking two pole QOT breaker in "ON" or "OFF" position.	QOT2PA	1.60
Handle Padlock Attachment: For 2 and 3 pole QO breakers which require padlocking in either "ON" or "OFF" position.	QO1HPL	1.00
Loose Attachment.	QO1PL	1.00
Fixed Attachment.		
Flush Lock: For converting spring catch on most QO load center doors to lock type.	PK2FL	7.50
Sealing Ear: Provides means of sealing trim mounting screws on QO load center covers.	QO1SE	.20
QO Replacement Interior Adaptor: For replacing absolute multi-breaker type "MB" and "MO-8" interiors in #2 or #3 box (11 1/8" H x 6 3/4" W x 3 1/4" D.) Kit consists of QO8 interior assembly (125 Amp. Mains), 4 — QO120 breakers, interior mounting frame and flush surface cover combination.	QO8MBF	35.00



QO8MBF Adaptor for MB and MO-8 Load Centers in #2 or #3 Box



QO® LOAD CENTERS

MAIN LUGS ONLY

FOR QO CIRCUIT BREAKERS OR QF FUSIBLE UNITS*

ORDER QO CIRCUIT BREAKERS & QF FUSIBLE UNITS SEPARATELY FROM PAGES 2, 3 AND 4

Mains Rating Amps.	Spaces	Max. No. Single Poles	Type of Enclosure	Use With	Basic Device Box & Interior Only		Cover with Door (Order Separately)			Ground Bar Kit (Order Separately)		Main Wire Size AWG/MCM		Box No.
					Cat. No.	Price	Flush	Surface	Price	Cat. No.	Price	CU	AL	
1 PHASE — 3 WIRE LUGS ONLY — NO DOOR														
40	2	2	Indoor Raintight	QO QO/QF	QO2S QO2F QO2RB	\$ 4.20 5.10 11.20	COVER WITHOUT DOOR INCLUDED WITH BASIC DEVICE			PK3GTA-1	\$1.00	14-6	12-6	1 2 1R
70	2	4	Indoor Raintight	QO/QOT QO/QOT/QF	QO2-4AF/S★ QO2-4ARB	6.50 12.60				PK4GTA	1.10	14-4	12-2	2 1R
100	6	12	Indoor Raintight	QO/QOT QO/QOT/QF	QO6-12F/S★ QO6-12RB	7.60 14.20				PK7GTA PK9GTA	1.20 1.30	6-1		4 3R
125	8	16	Indoor Raintight	QO/QOT QO/QOT/QF	QO8-16F/S★ QO8-16RB	12.80 22.80				PK9GTA-1	1.30	10-0		6 4R

1 PHASE — 3 WIRE LUGS ONLY†

100	6	12	Indoor Raintight	QO QOT & QF	QO6-12DF/S★ QO6-12RB	\$ 9.10 14.20	Cover w/Door Included w/Basic Device			PK7GTA PK9GTA	\$1.20 1.30	6-1		5 3R
125	8	16	Indoor Raintight		QO8-16DF/S★ QO8-16RB	14.30 22.80	Cover w/Door Included w/Basic Device			PK9GTA-1	1.30			6 4R
125	12	24	Indoor Raintight		QO12-24 QO12-24RB	18.60 34.30	QOC12F	QOC12S	\$ 3.00	PK15GTA	1.60	10-0		7 5R
125	16	24	Indoor Raintight		QO16-24 QO16-24RB	24.80 41.50	QOC16F	QOC16S	4.00	PK15GTA	1.60			8 5R
125	20	24	Indoor Raintight		QO20-24 QO20-24RB	32.80 48.70	QOC20F	QOC20S	4.00	PK15GTA	1.60			8 6R
150	12	24	Indoor Raintight		QO12-24H QO12-24HRB	24.00 40.70	QOC12HF	QOC12HS	4.00	PK15GTA	1.60	6-3/0		8 7R
150	16	30	Indoor Raintight		QO16-30H QO16-30HRB	27.20 47.90	QOC20HF	QOC20HS	8.00	PK18GTA	1.80	2-300		9 8R
150	20	30	Indoor Raintight		QO20-30H QO20-30HRB	34.40 57.20	QOC20HF	QOC20HS	8.00	PK18GTA	1.80			9 8R
*200	8	16	Indoor Raintight		QO8-16HA QO8-16HARB	23.20 39.90	QOC8HAF	QOC8HAS	4.00	PK9GTA	1.30	4-3/0	4-250	8 7R
200	12	24	Indoor Raintight		QO12-24HA QO12-24HARB	30.40 47.10	QOC12HF	QOC12HS	4.00	PK15GTA	1.60	6-3/0	6-4/0	8 7R
200	20	40	Indoor Raintight	QO QOT	QO20-40HA QO20-40HARB	40.80 63.60	QOC20HF	QOC20HS	8.00	PK23GTA	2.00	2-300		9 8R
200	30	40	Indoor Raintight		QO30-40 QO30-40RB	46.00 68.80	QOC30F	QOC30S	8.00	PK23GTA	2.00	2-4/0		9 8R
225	42	42	Indoor	QO	QO42	65.60	QOC42F	QOC42S	10.00	PK23GTA	2.00			10

3 PHASE — 4 WIRE LUGS ONLY

60	3	3	Indoor Raintight	QO	QO403F/S★ QO403RB	\$10.20 16.60	Cover w/o Door Incl. w/Device			PK4GTA	\$1.10	10-4		3 2R
125	12	24	Indoor Raintight	QO/QOT	QO412-24 QO412-24RB	31.30 47.80	QOC12F	QOC12S	\$3.00	PK15GTA	1.60	10-1		7 5R
125	20	30	Indoor Raintight		QO420-30 QO420-30RB	44.70 61.40	QOC20F	QOC20S	4.00	PK18GTA	1.80			8 6R
200	12	24	Indoor Raintight		QO412-24HA QO412-24HARB	43.10 59.80	QOC12HF	QOC12HS	4.00	PK15GTA	1.60	6-3/0	6-4/0	8 7R
200	30	40	Indoor Raintight		QO430-40 QO430-40RB	58.70 81.50	QOC30F	QOC30S	8.00	PK23GTA	2.00	4-3/0	2-4/0	9 8R
200	42	42	Indoor	QO	QO442	78.30	QOC42F	QOC42S	10.00	PK23GTA	2.00	2-4/0		10

1 PHASE — 3 WIRE LUGS ONLY RISER PANEL — EXTENDED SIDE GUTTER

Mains Rating	Spaces	Max. Poles	● Use With	Box Only		Interior Only		Flush Cover With Door		Ground Bar Kit (Order Separately)		Main Wire Size AWG/MCM		● Box No.
				Cat. No.	Price	Cat. No.	Price	Cat. No.	Price	Cat. No.	Price	CU	AL	
100	6	12	● QO QOT & QF	QOB6WG	\$7.40	QON6-12WG	\$ 5.20	QOC6WGF	\$7.40	PK9GTA	\$1.30	6-1		14
125	8	16		QOB12WG	9.10	QON8-16WG	8.90	QOC12WGF	8.60	PK15GTA	1.60			15
	12	24			QON12-24WG	16.60	PK15GTA			1.60	10-0			

*QO Breakers can be used in all QO Load Centers. QOT (Tandem) and QF (Fusible) can only be used in devices marked.

†RB Raintight devices have a bolt-on closing cap factory installed. Order bolt-on hub from page 15.

★Cover included with device. Order F for Flush, S for Surface.

†Approved for 3φ Grounded "B" Systems. 240 V. AC rated.

◆Box dimensions on page 14 and 15.

*With 100 amp sub-feed lugs.

Above listings using QO Circuit Breakers meet Federal Specification W-P-115a as Type I, Class 2. Using QF Fusible Units meets Type III, Class 2.

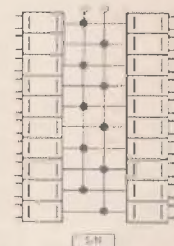
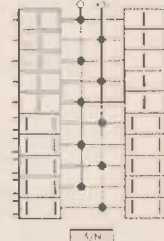
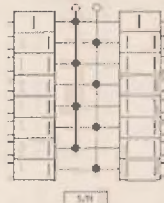
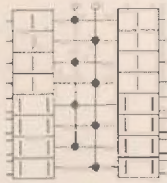
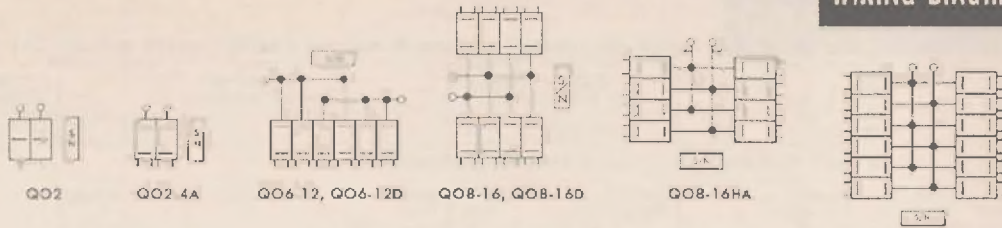


QO® LOAD CENTERS

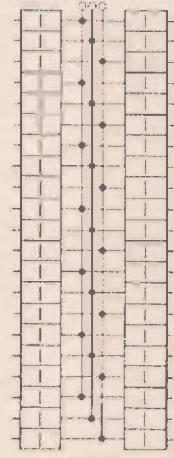
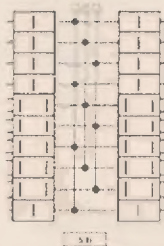
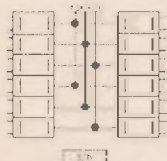
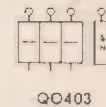
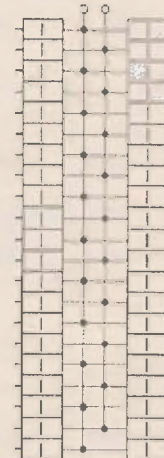
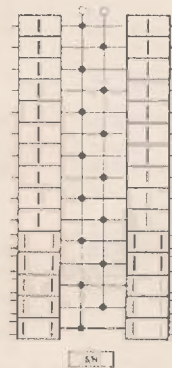
WIRING DIAGRAMS



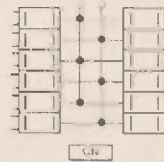
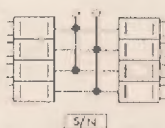
QO6-12S
with Breakers Installed



QO12-24H with Surface
Cover & QF Unit Installed



QOB6WG
with QOC6WGF Installed



QO® LOAD CENTERS

FOR QO CIRCUIT BREAKERS OR QF FUSIBLE UNITS*

SINGLE MAIN DISCONNECT

ORDER QO CIRCUIT BREAKERS AND QF FUSIBLE UNITS SEPARATELY FROM PAGES 2, 3, & 4.

Mains Rating Amps.	Spaces	Max. No. Single Poles	Type of Enclosure	Use With	Basic Device Box & Interior Only		Cover with Door (Order Separately)			Ground Bar Kit (Order Separately)		Main Wire Size AWG/MCM	Box No.
					Catalog No.	Price	Flush	Surface	Price	Catalog No.	Price		
1 PHASE — 3 WIRE MAIN DISCONNECT — MAIN CIRCUIT BREAKER INCLUDED													
100 A. Breaker	8	16	Indoor Raintight	QO QOT & QF	QO8-16M QO8-16MRB	\$32.50 48.20	QOC8MF	QOC8MS	\$ 3.00	P49GTA	\$1.20	4—1 CU/AL	7 5R
100 A. Breaker	12	20	Indoor Raintight		QO12-20M QO12-20MRB	38.70 55.40	QOC16MF	QOC16MS	4.00	PK12GTA	1.50		8 6R
100 A. Breaker	14	20	Indoor Raintight		QO14-20M QO14-20MRB	39.80 56.50	QOC16MF	QOC16MS	4.00	PK12GTA	1.50		8 6R
100 A. Breaker	16	20	Indoor Raintight		QO16-20M QO16-20MRB	40.80 57.60	QOC16MF	QOC16MS	4.00	PK12GTA	1.50		8 6R
100 A. Breaker	20	20	Indoor Raintight	QO	QO20M QO20MRB	43.00 59.70	QOC20MF	QOC20MS	4.00	PK12GTA	1.50	4—3/0 CU/AL	8 6R
125 A. Breaker	20	24	Indoor Raintight	QO/QOT & QF	QO20-24MG125 QO20-24MG125RB	75.00 99.00	QOC20MG225F	QOC20MG225S	10.00	PK15GTA	1.80		9 8R
150 A. Breaker	20	30	Indoor Raintight		QO20-30MG150 QO20-30MG150RB	75.00 99.00	QOC20MG225F	QOC20MG225S	10.00	PK18GTA	1.80		9 8R
150 A. Breaker	30	30	Indoor Raintight	QO	QO30MG150 QO30MG150RB	82.00 116.00	QOC30MG225F	QOC30MG225S	10.00	PK18GTA	1.80		10 9R
200 A. Breaker	20	40	Indoor Raintight	QO/QOT & QF	QO20-40MG200 QO20-40MG200RB	75.00 99.00	QOC20MG225F	QOC20MG225S	10.00	PK23GTA	2.00	2/0—3/0 CU 2/0—250 AL	9 8R
200 A. Breaker	30	40	Indoor Raintight		QO30-40MG200 QO30-40MG200RB	99.00 125.30	QOC30MG225F	QOC30MG225S	10.00	P423GTA	2.00		10 9R
200 A. Breaker	40	40	Indoor Raintight	QO	QO40MG200 QO40MG200RB	111.00 143.30	QOC40MG225F	QOC40MG225S	10.00	PK23GTA	2.00	3/0—300 CU 250—300 AL	11 10R
225 A. Breaker	20	40	Indoor Raintight	QO/QOT & QF	QO20-40MG225 QO20-40MG225RB	75.00 99.00	QOC20MG225F	QOC20MG225S	10.00	P423GTA	2.00		9 8R
225 A. Breaker	30	40	Indoor Raintight		QO30-40MG225 QO30-40MG225RB	99.00 125.30	QOC30MG225F	QOC30MG225S	10.00	P423GTA	2.00	10 9R	
225 A. Breaker	40	40	Indoor Raintight	QO	QO40MG225 QO40MG225RB	111.00 143.30	QOC40MG225F	QOC40MG225S	10.00	P423GTA	2.00	1 1G	

3 PHASE — 4 WIRE MAIN DISCONNECT — MAIN CIRCUIT BREAKER INCLUDED

125 A. Breaker	30	36	Indoor Raintight	QO/QOT	QO430-36MG125 QO430-36MG125RB	187.70 220.00	QOC30MG225F	QOC30MG225S	10.00	PK23GTA	2.00	10 9R
150 A. Breaker	30	36	Indoor Raintight		QO430-36MG150 QO430-36MG150RB	187.70 220.00	QOC30MG225F	QOC30MG225S	10.00	P423GTA	2.00	10 9R
150 A. Breaker	40	40	Indoor	QO	QO440MG150	205.70	QOC40MG225F	QOC40MG225S	10.00	PK23GTA	2.00	11
200 A. Breaker	30	36	Indoor Raintight	QO/QOT	QO430-36MG200 QO430-36MG200RB	187.70 220.00	QOC30MG225F	QOC30MG225S	10.00	PK23GTA	2.00	10 9R
200 A. Breaker	40	40	Indoor		QO440MG200	205.70	QOC40MG225F	QOC40MG225S	10.00	PK23GTA	2.00	11

1 PHASE — 3 WIRE MAIN DISCONNECT — FUSIBLE MAIN PULLOUT INCLUDED

200 A. Pullout	20	40	Indoor Raintight	QO/QOT	QO20-4CMP QO20-4CMPRB	73.00 99.00	QOC30MPF QOC30MPTE	QOC30MPS	12.00 12.00	PK23GTA	2.00	12 11R
200 A. Pullout	30	40	Indoor Raintight		QO30-4CMP QO30-4CMPRB	91.00 125.30	QOC30MPF QOC30MPTE	QOC30MPS	12.00 12.00	PK23GTA	2.00	12 11R
200 A. Pullout	40	40	Indoor	QO	QO40MP	108.00	QOC40MPF QOC40MPTE	QOC40MPS	12.00 12.00	P423GTA	2.00	13

• QO Breakers can be used in all QO Load Centers. QOT (Tandem) and QF (Fusible) can only be used in devices marked.
 ▲ RB Raintight devices have a bolt-on closing cap factory installed. Order bolt-on hub from page 15.
 • TF covers are for flush drywall construction.
 † Approved for 3φ Grounded "B" Systems. 240 V. AC rated.
 ‡ Box dimensions on page 14 and 15.
 Above listings using QO Circuit Breakers meet Federal Specification W-P-115a as Type I, Class 2. Using QF Fusible Units meets Type III, Class 2.

REPLACEMENT MAIN BREAKER ONLY

Type	Ampere Rating									
	100 A.		125 A.		150 A.		200 A.		225 A.	
	Cat. No.	Price	Cat. No.	Price	Cat. No.	Price	Cat. No.	Price	Cat. No.	Price
2 Pole	Q1-2100TF	\$ 21.10	Q2M-2125MT	\$ 49.00	Q2M-2150MT	\$ 49.00	Q2M-2200MT	\$ 49.00	Q2M-2225MT	\$ 49.00
3 Pole			Q2M-3125MT	131.00	Q2M-3150MT	131.00	Q2M-3200MT	131.00		



QO® LOAD CENTERS

WIRING DIAGRAMS



QO20M with Flush Cover and Breakers Installed



QO8-16M



QO12-20M



QO14-20M



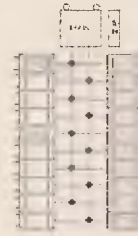
QO16-20M



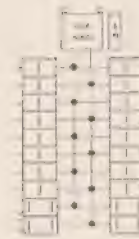
QO20-30MG150 with Surface Cover & QF units Installed



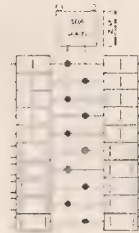
QO20M



QO20-40MP
QO20-40MG200
QO20-40MG225



QO20-24MG125



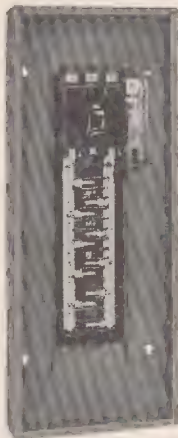
QO20-30MG150



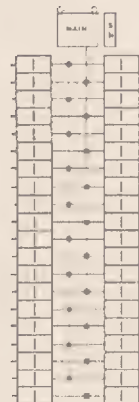
QO30MG150



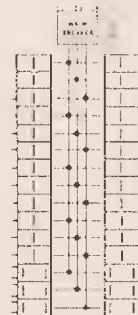
QO30-40MP
QO30-40MG200
QO30-40MG225



QO430-36MG150



QO40MP
QO40MG200
QO40MG225



QO430-36MG125
QO430-36MG150
QO430-36MG200



QO440MG150
QO440MG200



QO® LOAD CENTERS

FOR QO CIRCUIT BREAKERS OR QF FUSIBLE UNITS*

SPLIT BUS

1 PHASE — 3 WIRE PARALLEL MAINS
ORDER QO BREAKERS AND QF FUSIBLE UNITS SEPARATELY FROM PAGES 2, 3 AND 4.

Mains Rating Amperes	Main Section 2 Pole Spaces		Lighting Section		Type Enclosure	Use With	Box, Interior and Cover* with Door		Ground Bar Kit (Order Separately)		Main Wire Size AWG/MCM		Box No.
	Lighting Main	Branch	1 Pole Spaces	Max. No. Poles			Catalog Number	Price	Cat. No.	Price	CU	AL	
125	1	1	4	8	Indoor Raintight	QO	QO2X4-8F/S QO2X4-8RB	\$ 14.30 22.80	PK9GTA	\$1.30	10-0		7
125	1	2	6	12	Indoor Raintight	QOT	QO3X6-12F/S QO3X6-12RB	20.60 31.80	PK12GTA	1.50			5R
125	1	3	6	12	Indoor Raintight	&	QO4X6-12F/S QO4X6-12RB	22.30 35.30	PK12GTA	1.50			7
125	1	3	8	14	Indoor Raintight	QF	QO4X8-14F/S QO4X8-14RB	25.20 37.10	PK12GTA	1.50			5R
125	1	3	12	12	Indoor Raintight	QO	QO20-412F/S QO20-412RB	25.20 38.10	PK9GTA	1.30	10-1		8
125	1	3	8	14	Indoor Raintight	QO	QO6X8-14F/S QO6X8-14RB	34.30 46.80	PK12GTA	1.50			6R
150	1	2	6	12	Indoor Raintight	QOT	QO3X6-12HF/S QO3X6-12HRS	26.30 38.70	PK12GTA	1.50	6-2/0		8
150	1	3	6	12	Indoor Raintight	&	QO4X6-12HF/S QO4X6-12HRS	28.60 41.00	PK12GTA	1.50			7R
150	1	3	8	14	Indoor Raintight	QF	QO4X8-14HF/S QO4X8-14HRS	31.00 43.30	PK12GTA	1.50			8
150	1	3	8	14	Indoor Raintight	QO/QOT	QO6X8-14HF/S QO6X8-14HRS	40.10 53.80	PK12GTA	1.50			6R
150	2	4	12	22	Indoor Raintight	QO	QO6X12-22F/S QO6X12-22RB	44.00 58.90	PK18GTA	1.80	2-3/0		9
150	1	5	14	14	Indoor Raintight	QO	QO26-614HF/S QO26-614HRS	42.70 55.10	PK12GTA	1.50			8R
150	2	4	18	26	Indoor Raintight	QO/QOT	QO6X18-26F/S QO6X18-26RB	54.90 69.90	PK18GTA	1.80			9
200	2+		24	40	Indoor	QO/QOT	QO2X24-40F/S	87.00	PK23GTA	2.00			8R
200	2+		40	40	Indoor	QO	QO2X40F/S	124.00	PK23GTA	2.00	6-3/0	6-250	10
200	1+	4	10	20	Indoor Raintight	QO	QO5X10-20F/S QO5X10-20RB	54.50 69.40	PK15GTA	1.60	4-3/0		11
200	1	5	8	14	Indoor Raintight	QOT/QF	QO6X8-14HAF/S QO6X8-14HARS	45.80 59.60	PK12GTA	1.50			9
200	2	4	12	22	Indoor Raintight	QO/QOT	QO6X12-22AF/S QO6X12-22ARB	50.10 65.00	PK18GTA	1.80			8R
200	1	5	14	14	Indoor Raintight	QO	QO26-614HAF/S QO26-614HARS	48.90 61.30	PK12GTA	1.50			9
200	2	4	18	26	Indoor Raintight	QO/QOT	QO6X18-26AF/S QO6X18-26ARB	61.20 76.00	PK18GTA	1.80	2-4/0		8R
200	3	3	30	30	Indoor	QO	QO6X30F/S	77.00	PK23GTA	2.00			9

*QO Breakers can be used in all QO Load Centers. QOT (Tandem) and QF (Fusible) can only be used in devices marked.

▲RB Raintight devices have a bolt-on closing cap factory installed. Order bolt-on hub from page 15.

Above listings using QO Circuit Breakers meet Federal Specification W-P-115a as Type 1, Class 2. Using QF Fusible Units meets Type 3, Class 2.

◆Includes two 100 amp parallel main disconnects factory installed.





★Cover included with device. Order F for Flush, S for Surface.

◆Includes 100 amp lighting main factory installed.

◆Box dimensions on page 14 and 15.

ENCLOSED BREAKER

For use as a separate service entrance main breaker or for circuit disconnect and protection on 240 V. AC 3 wire and 4 wire systems. U.L. listed for Service Entrance Equipment. No door.

System	Amps.	† General Purpose				▲ Raintight				Breaker Incl. Terminals*		Box No.
		Complete Unit	Price	Enclosure Only	Price	Complete Unit	Price	Enclosure Only	Price	Breaker Cat. No.	Price	
3 WIRE S/N  240 V. AC	70	QO2100-70F/S	\$28.50			QO2100-70RB	\$34.90					16
	100	QO2100F/S	28.50			QO2100RB	34.90					12R
	125									Q2L2125	\$ 49.00	17
	150									Q2L2150	49.00	13R
4 WIRE S/N  240 V. AC	175									Q2L2175	49.00	17
	200									Q2L2200	49.00	13R
	225									Q2L2225	49.00	13R
	225											13R
4 WIRE S/N  240 V. AC	70	QO3100-70F/S	\$3.60			QO3100-70RB	\$1.10					16
	100	QO3100F/S	3.60			QO3100RB	1.10					12R
	125									Q2L3125	\$11.00	17
	150									Q2L3150	11.00	13R
4 WIRE S/N  240 V. AC	175									Q2L3175	\$11.00	17
	200									Q2L3200	11.00	13R
	225									Q2L3225	11.00	13R
	225											13R

*For terminal lug wire size information see page 47.

◆Box dimensions on page 14 and 15.

†Order F for Flush, S for Surface.

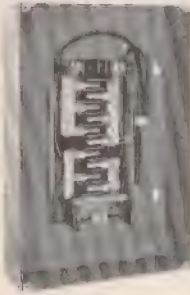
▲RB Raintight devices have a bolt-on closing cap factory installed. Order bolt-on hub from page 15.

○Top endwall has no hub opening.

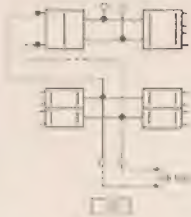


QO® LOAD CENTERS

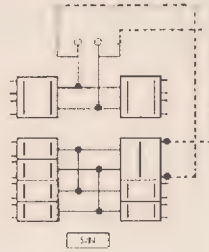
WIRING DIAGRAMS



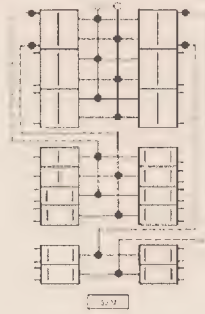
QO6X8-14 with
Cover Removed



QO2X4-6



QO3X6-12 & H



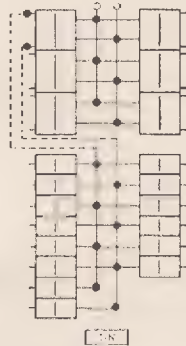
QO6X12-22 & A



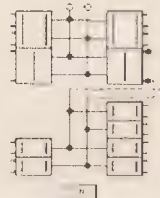
QO20-412



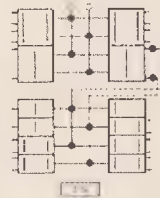
QO2100S



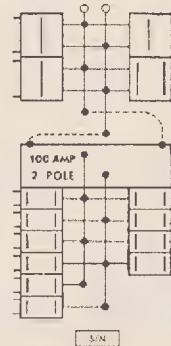
QO26-614 H & HA



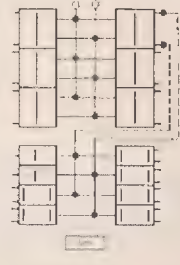
QO4X6-12 & H



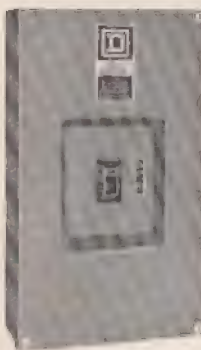
QO4X8-14 & H



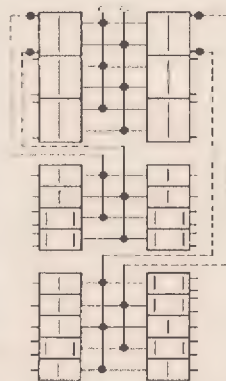
QO5X10-20



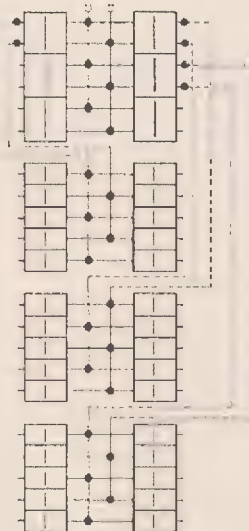
QO6X8-14
QO6X8-14H & HA



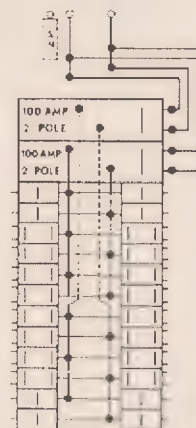
Q2 225S with
Q213200 Installed



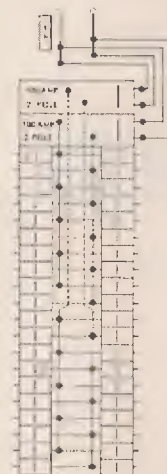
QO6X18-26 & A



QO6X30



QO2X24-40



QO2X40



QO® LOAD CENTERS

FOR USE WITH QO CIRCUIT BREAKERS ONLY

QOT TANDEM BREAKERS AND QF FUSIBLE UNITS CANNOT BE INSTALLED

This line of QO Load Centers is specifically designed for use in those areas prohibiting the use of tandem type circuit breakers having two poles per single case. Devices listed below accept plug-on QO and Q1 circuit breakers only (one pole per case). Tandem type QOT breakers and fusible QFT units are physically rejected and cannot be installed.



ORDER BRANCH QO BREAKERS SEPARATELY FROM PAGES 2 AND 3

MAIN LUGS ONLY

1 PHASE — 3 WIRE†

Mains Rating Amp.	Spaces and Max. No. of Poles	▲Type of Enclosure	Basic Device Box & Interior Only		Cover With Door (Order Separately)			Ground Bar Kit (Order Separately)		Main Wire Size AWG/MCM		◆Box No.
			Cat. No.	Price	Flush	Surface	Price	Cat. No.	Price	CU or AL		
125	12	Indoor Raintight	QO12 QO12RB	\$11.90 24.50	QOC12F	QOC12S	\$ 3.00	PK9GTA	\$1.30			7 5R
125	16	Indoor Raintight	QO16 QO16RB	17.30 34.10	QOC16F	QOC16S	4.00	PK12GTA	1.50	10-0		8 6R
125	20	Indoor Raintight	QO20 QO20RB	24.40 42.20	QOC20F	QOC20S	4.00	PK12GTA	1.50			8 6R
150	30	Indoor Raintight	QO30H QO30HRB	34.70 58.60	QOC30F	QOC30S	8.00	PK18GTA	1.80	2-3-0		9 8R
200	30	Indoor Raintight	QO30HA QO30HARB	41.10 65.00	QOC30F	QOC30S	8.00	PK18GTA	1.80	2-4-0		9 8R
225	42	Indoor	QO42	65.60	QOC42F	QOC42S	10.00	PK23GTA	2.00			10

SINGLE MAIN BREAKER

1 PHASE — 3 WIRE — MAIN CIRCUIT BREAKER INCLUDED

Mains Rating Amp.	Spaces and Max. No. of Poles	▲Type of Enclosure	Basic Device Box and Interior Only		Cover With Door (Order Separately)			Ground Bar Kit (Order Separately)		Main Wire Size AWG/MCM		◆Box No.
			Cat. No.	Price	Flush	Surface	Price	Cat. No.	Price	CU	AL	
100 A. Breaker	12	Indoor Raintight	QO12M QO12MRB	\$30.70 47.40	QOC20MF	QOC20MS	\$ 4.00	PK9GTA	\$1.30			8 6R
100 A. Breaker	16	Indoor Raintight	QO16M QO16MRB	35.50 52.30	QOC20MF	QOC20MS	4.00	PK12GTA	1.50	4-1		8 6R
100 A. Breaker	20	Indoor Raintight	QO20M QO20MRB	43.00 59.70	QOC20MF	QOC20MS	4.00	PK12GTA	1.50			8 6R
150 A. Breaker	30	Indoor Raintight	QO30MG150 QO30MG150RB	82.00 116.00	QOC30MG225F	QOC30MG225S	10.00	PK18GTA	1.80	4-3-0		10 9R
200 A. Breaker	30	Indoor Raintight	QO30MG200 QO30MG200RB	85.00 119.00	QOC30MG225F	QOC30MG225S	10.00	PK18GTA	1.80			10 9R
200 A. Breaker	40	Indoor Raintight	QO40MG200 QO40MG200RB	111.00 143.30	QOC40MG225F	QOC40MG225S	10.00	PK23GTA	2.00	2-0-3-0	2-0-250	11 10R

SPLIT BUS

1 PHASE — 3 WIRE — PARALLEL MAINS

Mains Rating Amp.	Main Section 2 Pole Spaces		Lighting 1 Pole Spaces and Max. No. Poles	▲Type of Enclosure	Box, Interior and Cover & With Door		Ground Bar Kit (Order Separately)		Main Wire Size AWG/MCM		◆Box No.
	Lighting Main	Branch			Cat. No.	Price	Cat. No.	Price	CU	AL	
125	1	2	10	Indoor Raintight	QO16-310F-S QO16-310RB	\$21.60 34.60	PK9GTA	\$1.30	10-0		8 6R
125	1	3	12	Indoor Raintight	QO20-412F-S QO20-412RB	25.20 38.10	PK9GTA	1.30	10-0		8 6R
125	1	5	14	Indoor Raintight	QO26-614F-S QO26-614RB	36.90 48.20	PK12GTA	1.50			9 8R
150	1	5	14	Indoor Raintight	QO26-614HF-S QO26-614HARB	42.70 55.10	PK12GTA	1.50			8R
200	1	5	14	Indoor Raintight	QO26-614HAF-S QO26-614HARB	48.30 61.30	PK12GTA	1.50	4-3-0	2-4-0	8R

▲RB Raintight devices have a bolt-on closing cap factory installed. Order bolt-on hub from page 15.

◆Box dimensions on pages 14 and 15.

*Cover included with device. Order F for Flush, S for Surface.

†Approved for 3φ Grounded "B" Systems, 240 V AC rated.

Above listings meet Federal Specification W-P-115a as Type I, Class 2.

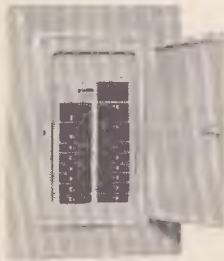


WIRING DIAGRAMS

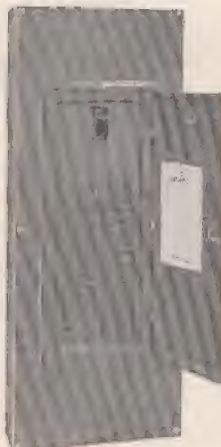
MAIN LUGS ONLY



QO20 with Surface Cover and Breakers Installed



QO20M with Flush Cover and Breakers Installed



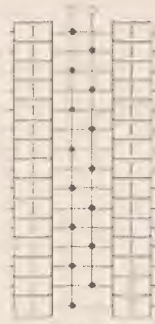
QO30MG200 with Surface Cover Installed



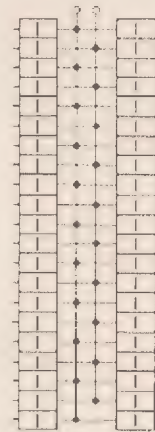
QO20-412



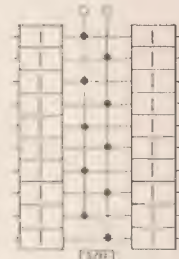
QO12



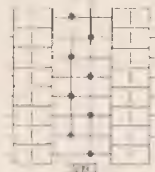
QO30H & HA



QO42

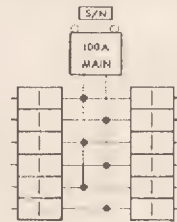


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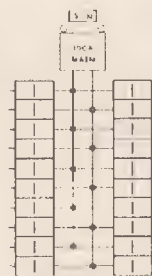


QO16

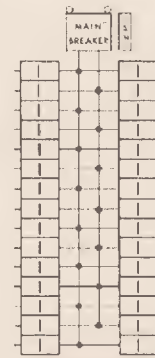
MAIN BREAKER



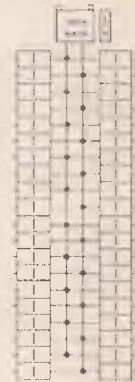
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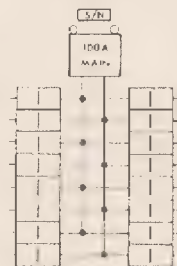
QO20M



QO30MG150
QO30MG200



QO40MG200

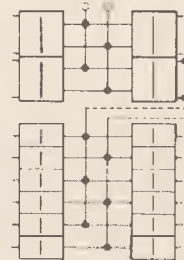


QO16M

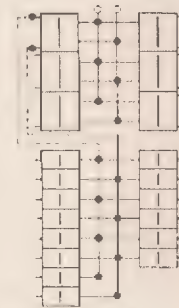
SPLIT-BUS



QO16-310



QO20-412



QO26-614
QO26-614H & HA

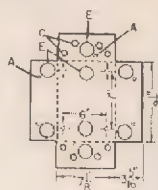
KNOCKOUTS

KNOCKOUTS

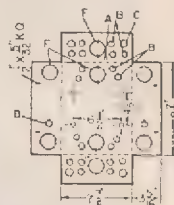
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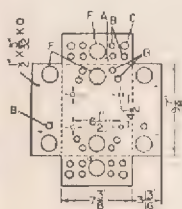
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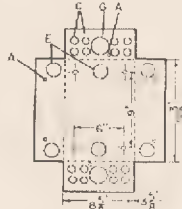
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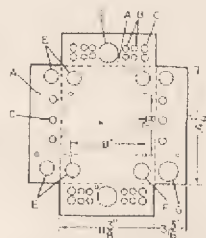
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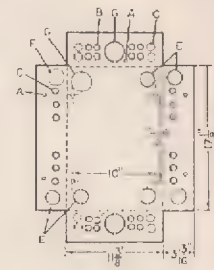
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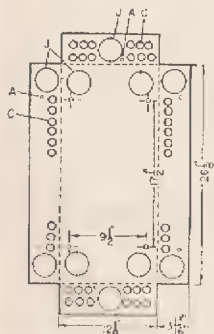
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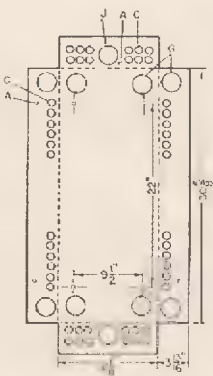
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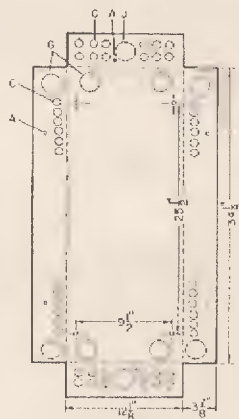
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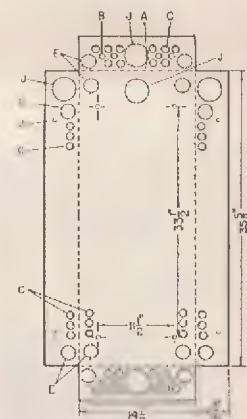
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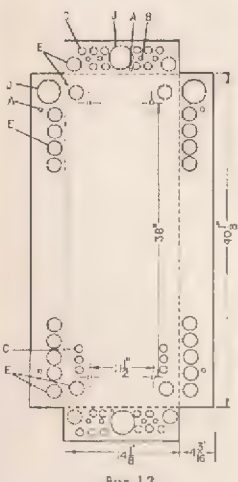
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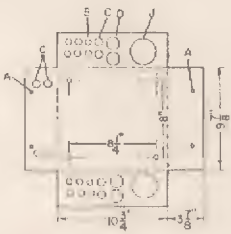
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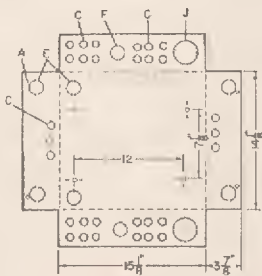
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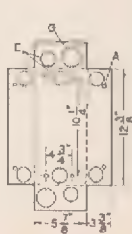
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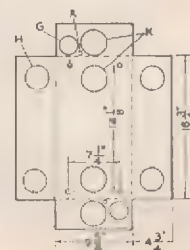
Box 14



Box 19



Box 14



Box 17

RAINTIGHT HUBS

BOLT-ON HUBS FOR "RB" DEVICES

Square D raintight merchandized equipment features a bolt-on conduit hub design. These devices will accept $\frac{3}{4}$ " through $2\frac{1}{2}$ " bolt-on hubs without the use of reducers. Off-center conduit thread openings and elongated mounting holes provide quick and easy adjustment to eliminate costly conduit offsets and bends. No gaskets required. A factory installed closing cap protects the device against dirt and moisture when it is installed ahead of the conduit.

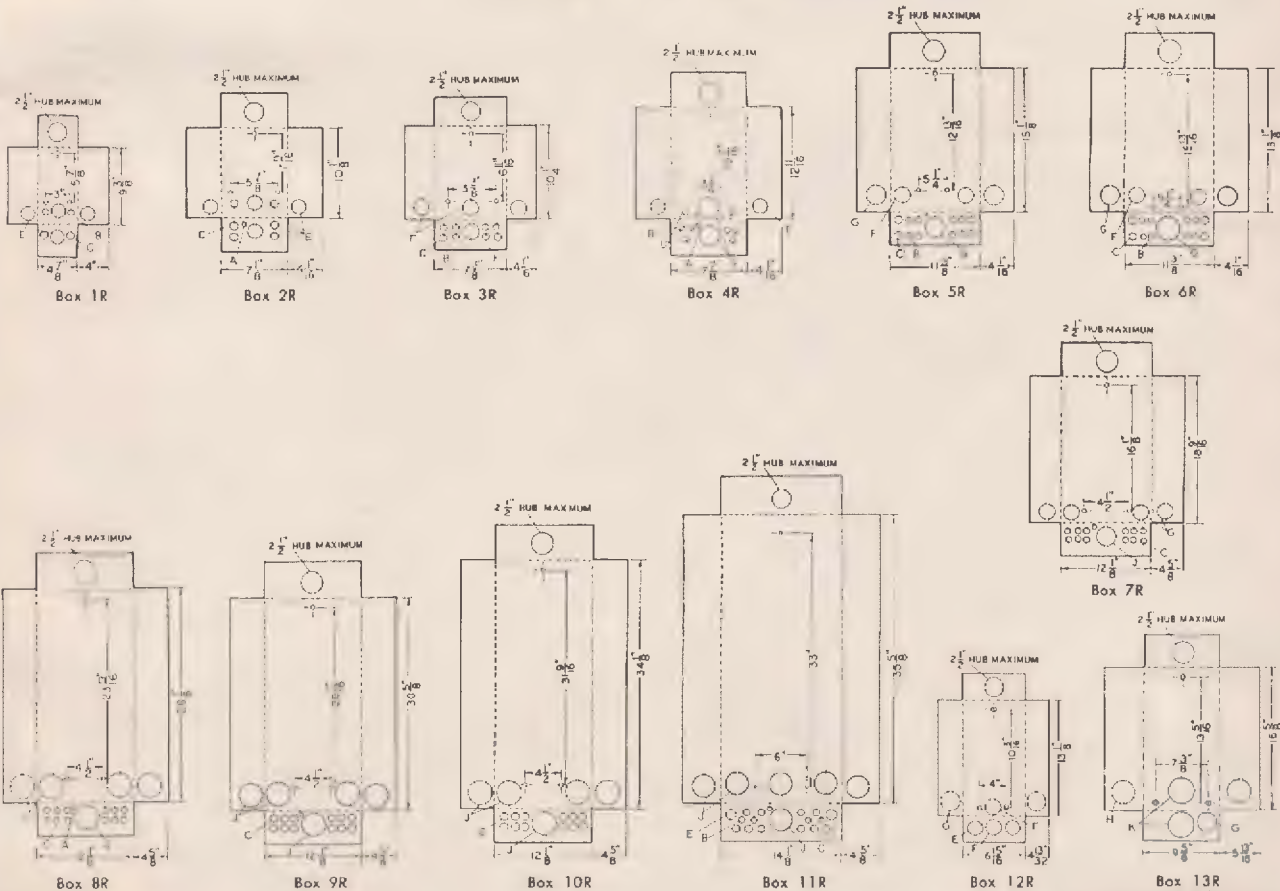


BOLT-ON HUBS

Conduit Size	$\frac{3}{4}$ "	1"	$1\frac{1}{4}$ "	$1\frac{1}{2}$ "	2"	$2\frac{1}{2}$ "
Hub Cat. No.	B075	B100	B125	B150	B200	B250
Price	\$3.20	\$3.20	\$3.20	\$3.20	\$5.50	\$9.60

NOTE: Closing cap (catalog number B-CAP) is provided factory installed on each device having "RB" suffix. Price \$0.30 if ordered separately.

RAINTIGHT ENCLOSURES—QO® LOAD CENTERS



Box 13R+ same as 13R except top endwall has no opening.



SERVICEpak[®] DISTRIBUTION PANELS

COMBINATION/NON-COMBINATION TYPE

Distribution panels with or without self-contained metering provisions designed specifically for: gasoline service stations, food and beverage establishments, ice cream parlors and other small commercial buildings.

Combination panels accommodate top or bottom entering service and have 4-jaw meter socket with metering provisions as noted. Non-combination panels are for installations requiring the meter to be outside the building. Indoor surface mounting enclosures have removable bottom plate and are finished white baked enamel.

A mechanical interlock is provided to couple the night-light and air-compressor breakers in service station applications.

Accessory devices attach to right or left side of combination or non-combination panels by matching knockouts.

Furnished less branch breakers. Order QO or Q1 plug-on breakers separately.

All devices and accessories are listed by Underwriters' Laboratories.

Max. Poles	Mains		1 Phase — 3 Wire		Dimensions (Inches)			Description
	Rating	Type	Cat. No.	Price	W	H	D	

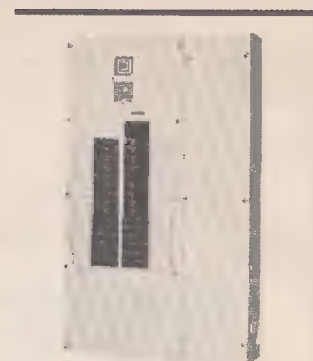
WITHOUT METER PROVISIONS

30	100 A.	Lugs	SO1-3L	\$134.	15	28	4 1/2	
	100 A.	Breaker	SO1-100	191.	15	28	4 1/2	
40	200 A.	Lugs	SO2-3L	167.	18 1/2	34	6	
	200 A.	Breaker	SO2-200	211.	18 1/2	34	6	

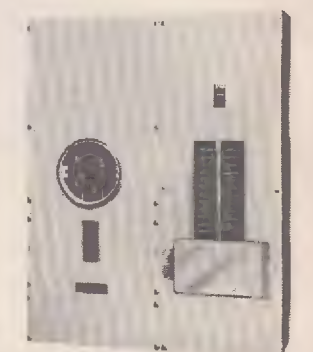
WITH UTILITY METERING PROVISIONS

30	100 A.	Breaker	SS1-100	\$281.	22	28	4 1/2	Hot sequence with test switch perch.
	100 A.	Breaker	SS1-100M	288.	22	28	4 1/2	Hot sequence with internal by-pass
	100 A.	Breaker	ST1-100	306.	22	28	4 1/2	Cold sequence with test switch perch
40	200 A.	Breaker	SS2-200	420.	27	34	6	Hot sequence with test switch perch
	200 A.	Breaker	SS2-200M	433.	27	34	6	Hot sequence with internal by-pass
	200 A.	Breaker	ST2-200	465.	27	34	6	Cold sequence with test switch perch

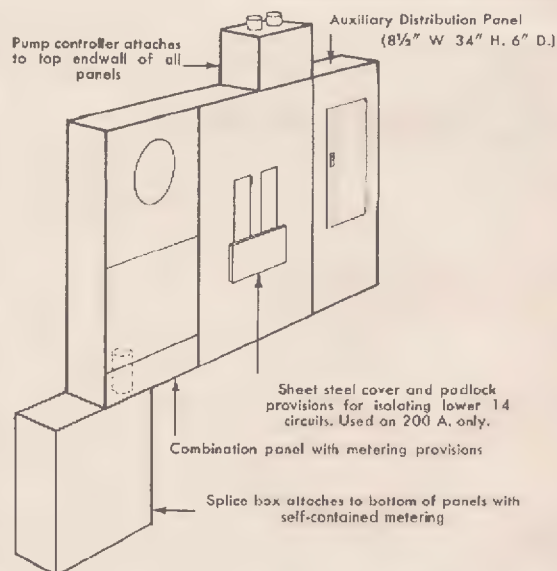
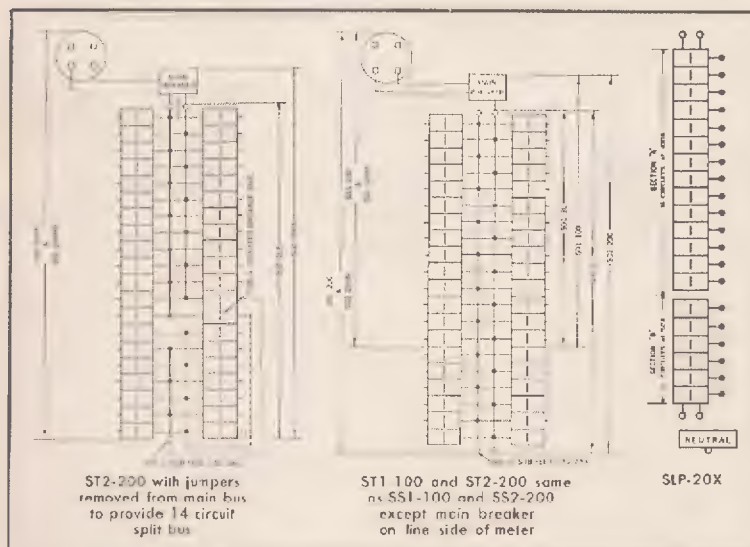
• All 200 Amp. devices have removable jumpers in the main bus bars for field modification to provide a 14 circuit split-bus. Steel cover for isolating this section available from accessory Table below.



SO1-100 Panel with SSG-1 Tumbler Gutter



SS2-200 with Steel Cover over split-bus section



ACCESSORIES

Description	Add to basic panel		Description	Cat. No.	Price	Description	Cat. No.	Price
	Suffix No.	Price						
AUTOMATIC CIRCUIT CLOSING 100 A. Meter Socket..... 200 A. Meter Socket.....	C	\$ 3.40	TUMBLER SWITCH GLTTER Accommodates 1-rated tumbler switches. 12 switch spaces — 100 A. panels..... 16 switch spaces — 200 A. panels.....	SSG-1	\$ 46.00	PUMP CONTROLLERS For submersible product systems. 1 relay and 1 pilot light..... 2 relays and 2 pilot lights.....	SPC-1	\$45.00
	C	5.20		SSG-2	51.00		SPC-2	80.00
MANUAL BY-PASS (externally oper.) 100 A. Meter Socket only.....	D	19.50	LIGHTING CONTACTOR CABINET Contains one 4-pole Size 1 contactor with space and mounting provisions for one ad- ditional contactor.....	SCC-1	154.00	UNDERGROUND SPLICE BOX Sealable box mounts to bottom of 200 A. panels with utility meter provisions 8" W x 18" H x 6" D..... 18" W x 24" H x 6" D.....	SUG8186 SUG18246	32.00 60.00
AUXILIARY DISTRIBUTION PANEL 150 amp. — 20 circuit split-bus rated panel with lockable door. Attaches to either left or right of 200 amp. panel expand service from 40 to 60 poles..	Suffix No.	Price		SBPO-1 SBP-1 SBPO-2 SBP-2	8.40 8.40 7.10 7.10	STEEL ISOLATION — COVER Used to isolate 14 circuit split bus. Has provisions for padlock.....	SIC-	32.00
	SLP-20X	235.00	SPARE BOTTOM PLATES For 100 A. non-combination panels (SO1) 100 A. combination panel (SS1, ST1), 200 A. non-combination panels (SO2) 200 A. combination panels (SS2, ST2)					



FUSIBLE SERVICE EQUIPMENT

This is factory assembled equipment providing only the circuits shown, no space is provided for additional circuits.

**MAIN &
RANGE**

120/240 volt ac 1 ϕ -3 wire systems.

MAINS		BRANCHES		GENERAL PURPOSE		RAINTIGHT	
Rating	Pullouts	Pullouts	Plugs	Cat. No. †	Price	Cat. No. †	Price

SINGLE MAIN PULLOUT

60 A.	1-60 A.		4	M4F or S	\$15.90	M4RB ▲	\$32.20
			6	M6F or S	23.60	M6RB ▲	38.40
			8	M8F or S	28.70	M8RB ▲	41.20
	1-60 A.	1-60 A.	4	MR4F or S	16.90	MR4RB ▲	33.40
			6	FSP33782F or S	29.90		
			8	FSP33982F or S	35.10	*	

PARALLEL MAIN PULLOUTS

100 A.	2-60 A.		4	LR4F or S	\$16.90	LR4RB ▲	\$33.40
120 A.			6	FSP33783PF or S	29.90		
			8	FSP33983PF or S	35.10	*	

● This device has 60 amp. sub-feed lugs behind lighting or main pullout.

† The FSP devices, FSP33782S, etc. and all raintight devices have insulated groundable neutrals. For insulated neutrals on indoor M, MR and LR devices add suffix Letter "Z" to the catalog number, such as MR4ZS.

▲ Type RB Raintight devices have a bolt-on closing cap factory installed. Order bolt-on hub from page 15.
* For raintight order separately merchandised FSP components from pages 18 and 19.

REPLACEMENT PULLOUT HEADS ONLY

Description or Device Catalog Number	Pullout Cat. No.	Price
30 A. branch pullout in fixed portion of interior	122278	\$ 2.70
Pullout in FSP 230 and FSP 230 WH	122249-A	2.70
60 A. main pullout or lighting main pullout. Range pullout in MR4 and LR4.	122277	2.70
branch pullout in 100 A. main disconnects		
60 A. range pullout, pullout in FSP 260 and FSP 260 WH, main in MR4,	122248-A	2.70
lighting main in LR4		
All 100 A. 2 pole pullouts	122310	11.40
All 200 A. 2 pole pullouts	122300	16.60

PULLOUT ONLY

MAINS		HP RATINGS		GENERAL PURPOSE			RAINTIGHT	
System	Rating	Std.	Max.	Surface	Flush	Price	Cat. No. ▲	Price
1 ϕ -3W ★	30	1½	3	FS230S	FS230F	\$15.40	FS230RB	\$ 16.70
	60	3	10	FS260S	FS260F	15.40	FS260RB	16.70
	100	7½	15	FS2100S	FS2100F	38.40	FS2100RB	44.50
	200			FS2200S	FS2200F	84.60	FS2200RB	113.00
3 ϕ -4W	30	3	7½	FS330S	FS330F	18.30	FS330RB	26.60
	60	7½	10	FS360S	FS360F	29.00	FS360RB	40.80
	200			FS3200S	FS3200F	114.00	FS3200RB	136.00

★ Approved for Delta grounded B phase systems. 3 ϕ 3 W. Two fuses only.

▲ Type RB Raintight devices have a bolt-on closing cap factory installed. Order bolt-on hub from page 15.

FUSE CABINETS

No. Branches	Lug Mains		Wt. (lbs.)	Box Dimensions			1 Phase 3 Wire		
	Amp.	Size		Hgt.	Width	Depth	Flush Cat. No.	Surface Cat. No.	Price
2	30	8-14	5	6¾	6¾	2¼	P2F	P2S	\$ 7.30
4	30	8-14	6	6¾	6¾	2¼	P4F	P4S	9.90
6	45	6-10	10	11¼	7½	3¼	P6F	P6S	16.70
8	60	4-10	11	13	7½	3¼	P8F	P8S	22.60
10	60	4-10	16	15¾	8¾	3¼	P10F	P10S	28.70
12	60	4-10	18	17	8¾	3¼	P12F	P12S	34.30

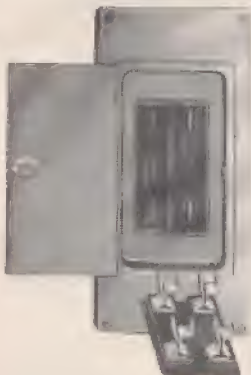
* For outside dimensions of FLUSH front, add approximately 1¼" to height and width of box.



LR4S



Pullout
Head
Only



FS2200S

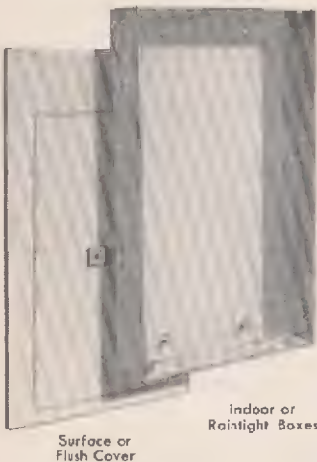


P12S



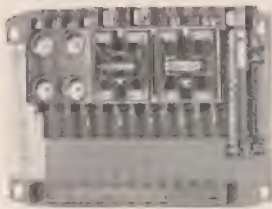
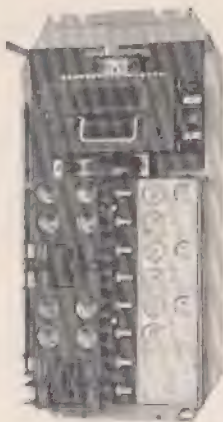
FSP® FUSIBLE LOAD CENTERS

SEPARATELY MERCHANDIZED COMPONENTS



Surface or
Flush Cover

Indoor or
Raintight Boxes



Main Pullout Interiors
Paralleled Main Interiors
Lugs Only Interiors








FSP40M Completed Device:
Box, Interior, Cover, and Branches

Order box, interior, plug-in units and cover separately. A minimum number of separate interiors with basic factory installed circuits and plug-in spaces provide unlimited flexibility as well as a minimum inventory. Plug-in units are added to fit the job exactly. Future circuits are left blank.

PLUG-IN UNITS

FSP PLUG-IN UNITS provide wide range of flexibility. FSP fusible load centers contain plug-in space for extra branches to permit expansion into any combination of circuits to meet the job requirements exactly. No excess cost since you pay for additional units only when you need them. Two FSP130 twin plug fuse sections occupy the same space as one pullout types FSP230, 260, 230WH, 260WH, and 330D. FSP360D occupies the same space of three FSP130's. Pictorial labels permanently attached to interior indicate locations where possible.

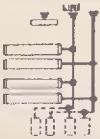
Amp. Rating	SINGLE POLE		TWO POLE CARTRIDGE FUSE PULLOUTS				THREE POLE FUSIBLE PULLOUTS					
	Twin Plugs 120 V. AC		Single Pullout 240 V. AC		Water Heater 240 V. AC		Delta 240 V. AC		Delta 240 V. AC			
												
	Cat. No.	Price	Cat. No.	HP Rating		Price	Cat. No.	Price	Cat. No.	HP Rating		Price
				Std.	Max.					Std.	Max.	
30	FSP130	\$3.70	FSP230	1½	3	\$7.40	FSP230WH	\$7.40	FSP330D	3	7½	\$16.60
60			FSP260	3	7½	7.40	FSP260WH	7.40				
									FSP360D	7½	10	\$16.60

ACCESSORIES

FSP-263AL	Parts kit to convert 60 A. pullouts to accept std. N.E.C. 30 A. cart.	\$1.50
FSP-1CP	Closure plate.	.30

PARALLEL-RAINTIGHT

Device Complete with NEMA 3R Raintight Enclosure ▲

Mains	Wiring Diagrams	Catalog Number	Included	Additional Space	Price
200 A.		FSP-2100-1RB	2-100 A. Main Pullouts	1-30 or 60 A. Main Pullout	\$120.00
		FSP-2100-2RB		2-30 or 60 A. Main Pullout	125.00

▲Type RB Raintight devices have a bolt-on closing cap factory installed. Order bolt-on hub from page 15.

NO PLUG-IN MISTAKES

You cannot plug-in plug fuse sections in spots reserved for main disconnect pullouts. A rejection barrier interferes with plug fuse sections while permitting 30 ampere or 60 ampere pullouts to clear. Pictorial labels permanently attached to the interior make it simple to get the correct units in the correct spaces.



FSP® FUSIBLE LOAD CENTERS

SERVICE — 120/240 Volts AC

FSP COMPONENTS — ORDER SEPARATELY

SINGLE MAIN

SELECT PLUG-IN UNITS SEPARATELY FROM PAGE 18

Mains	INTERIOR ONLY					BOX ONLY★		INDOOR COVER ONLY		
	Wiring Diagram	Cat. No.	Included	Add'l Space	Price	Cat. No.	Price	Surface	Flush	Price
60 A.		FSP4-112	1-60 A. Main 4-Plugs	8 Plugs †	\$12.90	FSB-4	\$ 3.70	FSC-4S	FSC-4F	\$ 3.70
						FSB-4RB ▲	20.10			
100 A.		FSP-120M	1-100 A. Main 1-60 A. Branch 8-Plugs	12 Plugs †	42.60	FSB-8M	7.40	FSC-8MS	FSC-8MF	9.90
						FSB-8MRB ▲	30.00			
100 A.		FSP-320M	1-100 A. Main 1-60 A. Branch 1-30 A. Branch 8-Plugs	1-30 A. or 60 A. Branch 12 Plugs †	53.10	FSB-8M	7.40	FSC-8MS	FSC-8MF	9.90
						FSB-8MRB ▲	30.00			
200 A.		FSP-28M	1-200 A. Main	28 Plugs †	53.20	Box Included With Interior		FSC-28MS	FSC-28MF	12.00
		FSP-28MRB ▲			85.30					
		FSP-40M	1-200 A. Main	40 Plugs †	55.70	Box Included With Interior		FSC-40MS	FSC-40MF	12.00

PARALLEL MAIN

120 A.		FSP4-208	1-60 A. Light Main 4-Plugs	1-60 A. or 30 A. Main 4 Plugs †	\$12.90	FSB-4	\$ 3.70	FSC-4S	FSC-4F	\$ 3.70
						FSB-4RB ▲	20.10			
125 A.		FSP6-312	1-60 A. Light Main 8-Plugs	2-60 A. or 30 A. Mains 4 Plugs †	27.10	FSB-6	4.90	FSC-6S	FSC-6F	4.90
150 A.		FSP6-312H			28.40	FSB-6RB ▲	22.70	FSC-6S	FSC-6F	4.90
						FSB-6	4.90	FSC-6HS	FSC-6HF	4.90
125 A.		FSP6-408	1-60 A. Light Main 1-60 A. Main 4-Plugs	2-60 A. or 30 A. Mains 4 Plugs †	27.10	FSB-6HRS ▲	22.70	FSC-6S	FSC-6F	4.90
150 A.		FSP6-408H			28.40	FSB-6	4.90	FSC-6HS	FSC-6HF	4.90
						FSB-6HRS ▲	22.70			
150 A.		FSP8-512H	1-60 A. Light Main 1-60 A. Main 8-Plugs	3-60 A. or 30 A. Mains 4 Plugs †	31.00	FSB-8M	7.40	FSC-8-512S	FSC-8-512F	9.90
200 A.		FSP8-512A			39.50	FSB-8-512RB ▲	30.00	FSC-8-512S	FSC-8-512F	9.90
						FSB-8M-A	7.40	FSC-8-512AS	FSC-8-512AF	9.90
						FSB-8-512RB ▲	30.00			
200 A.		FSP8-1312	1-60 A. Ltg. Main 1-100 A. Main 8 Plugs	2-60 A. or 30A. Mains 4 Plugs †	60.20	FSB-8M-A	7.40	FSC8-1312S	FSC8-1312F	9.90
						FSB-8-1312RB ▲	30.00			

MAIN LUGS

125 A.		FSP4-112L	1-60 A. Pullout & 4 Plugs	8 Plugs †	\$14.20	FSB-4	\$ 3.70	FSC-4LS	FSC-4LF	\$ 3.70
						FSB-4RB ▲	20.10			
125 A.		FSP6-120L	1-60 A. Pullout & 8 Plugs	12 Plugs †	27.10	FSB-6	4.90	FSC-6LS	FSC-6LF	4.90
						FSB-6RB ▲	22.70			

▲Type RB Raintight devices have a bolt-on closing cap factory installed. Order bolt-on hub from page 15.

†Four plug fuses can be replaced by one 240 V plug-in unit FSP230 or FSP260.

★Boxes not marked with (▲) are indoor type.



SCHEDULE C DISCOUNT

PAGE 19

METER DEVICES—RESIDENTIAL THRU 400 AMPS.

RAINTIGHT COMBINATION SERVICE ENTRANCE DEVICE

Four-jaw meter socket has AL-CU line lugs and snap-type sealing ring. Factory bussed between socket and interior (main lugs or main breaker). Branch circuits accept QO or Q1 plug-in breakers and QF fusible plug-in units. Neutral is insulated and groundable and has all AL-CU lugs. Three-wire S, N 240 V. AC maximum. Enclosures are NEMA 3R. Adjustable mounting straps on surface type; mounting flange and stucco stop on semi-flush type.

Non-Circuit Closing Catalog Number**		Mains		Branches (Max. Poles)		Box Size (Dim. are Approx.)			Price
Surface	Semi-Flush	Rating	Type	Single	Tandem	W	H	D	

TOP OR BOTTOM SERVICE; TOP OR BOTTOM LOAD ▲

C100QRB	C100QRF	100A	C/B	0	0	11	18	5	\$ 47.00
C125QRB	C125QRF	125A	C/B	0	0	11	22	5½	78.00
C150QRB	C150QRF	150A	C/B	0	0	14	24	5½	131.00
C200QRB	C200QRF	200A	C/B	0	0	14	24	5½	131.00
	CQO2100RF	100A	C/B	0	0	14¼	12¾	5	47.00
	CQO2100-1RF	125A	Lugs	2½	0	14¼	12¾	5	67.00

TOP SERVICE; TOP OR BOTTOM LOAD ▲

C816RB		125A	Lugs	8	16	14	21	5	33.00
C1224RB		125A	Lugs	12	24	14	21	5	42.00
C2224RB		200A	Lugs	12	24	12	22	5	88.00
C1220QRB	C1220QRF	100A	C/B	12	20	14	21	5	62.00
C1620QRB	C1620QRF	100A	C/B	16	20	14	21	5	69.00
C2024QRB	C2024QRF	125A	C/B	20	24	12½	31½	5	123.00
C2030QRB	C2030QRF	150A	C/B	20	30	12½	33	5	176.00
C2440QRB	C2440QRF	200A	C/B	24	40	12½	33	5	183.00

UNDERGROUND SERVICE

JGC100QR	UGC100QRF	100A	C/B	0	0	12	19	5	62.00
JGC125QR	UGC125QRF	125A	C/B	0	0	12	19	5	84.00
JGC150QR	UGC150QRF	150A	C/B	0	0	14½	22	5½	157.00
JGC200QR	UGC200QRF	200A	C/B	0	0	14½	22	5½	157.00
UGC1220QR	UGC1220QRF	100A	C/B	12	20	14½	21	5	76.00
UGC1620QR	UGC1620QRF	100A	C/B	16	20	14½	21	5	83.00
UGC2024QR	UGC2024QRF	125A	C/B	20	24	20	21	5½	154.00
UGC2030QR	UGC2030QRF	150A	C/B	20	30	23½	22	5½	202.00
UGC2440QR	UGC2440QRF	200A	C/B	24	40	23½	22	5½	212.00
	UGC440QRF ▲	400A	C/B	42		30	55	5½	974.00

▲Sealable C.T. compartment, test perch, and 5-jaw meter socket.

*Automatic Circuit Closing: 100A is not available, 200A add \$5.20 list. Add suffix C to catalog number (i.e., C 200CQRB.)

†5th jaw kit (for either 6 or 9 o'clock positions) Cat. No. SG-109 (100-150A) \$1.50 list, Cat. No. MSA2U (200A) \$2.70 list.

▲Type RB Raintight devices have a bolt-on closing cap factory installed. Order bolt-on hub from Page 15.

● Top endwall has two closing caps; bottom endwall has two combination knockouts. For service IN top and load OUT top, use two bolt-on hubs.

±Semi-flush devices "straddle" stud. Width is 23½". Includes 1-100A 2-pole breaker plus 1-2-pole space.

●Order QO or Q1 Breakers separately from page 2; QF units from Page 4.

For ground bar kits, refer to Page 8.

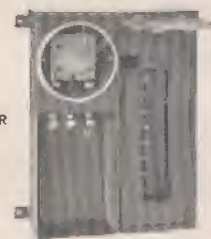
C100QRB



C1620QRB



UGC1620QR



COMBINATION COMMERCIAL SAFETY SOCKET BOX

Common enclosure with meter socket and main disconnect. Has space for utility test blocks or manual by-pass (internal type). 4, 5 or 7 jaw meter socket has AL-CU line lugs. All devices are U/L listed.

Service 240 V. AC	Jaws	Main Amps.	★ Non-Circuit Closing				Dimensions (Inches)		
			± Indoor — Outdoor Surface		± Outdoor — Semi-Flush				
			Catalog No.	Price	Catalog No.	Price	W	H	D
1φ		†100	CM4-1ORB	\$ 57.	CM4-1ORB	\$ 60.	10	33	4½
3 W. S. N	4	▲200	CM4-2PRB	204.	CM4-2PRBF	211.	14	48	6
3φ		◆100	CM5-1ORB	73.	CM5-1ORB	75.	10	33	4½
3 W.	5	▲200	CM5-2PRB	252.	CM5-2PRBF	257.	14	48	6
3φ		◆100	CM7-1ORB	85.	CM7-1ORB	87.	10	33	4½
4 W. S. N	7	▲200	CM7-2PRB	276.	CM7-2PRBF	278.	14	48	6

● To add 5th jaw, use Kit No. SG66 (100A) \$1.40 list or No. MSA-2U (200A) \$2.70 list.

★For internal type Manual Circuit Closing, add letter "M" to Cat. No. i.e., CM4-1MORB. Add \$6.40 (100A) or \$12.70 (200A).

±RB & RBF outdoor devices have a bolt-on closing cap factory installed. Order bolt-on hub from Page 15.

†Space for 2 pole QO or Q1. ◆Space for 3 pole QO or Q1. Order plug-in breaker separately.

▲Includes fusible pull-out.

CURRENT TRANSFORMER CABINETS

Cat. No. 13991 accommodates meter test perch.

Cat. No. 13992 accommodates one or two transformers and has one-piece removable cover hinged at long side. Drilled for current transformer.

Cat. No. SK2146 accommodates three transformers.

Cat. No. SK2256 accommodates one transformer.

Cat. No.	Price	Height	Width	Depth
13991	\$ 17.	11"	12¾"	4½"
13992	52.	24¾"	32¾"	10¾"
SK2146	111.	36¾"	32¾"	10¾"
SK2256	61.	18¾"	18¾"	9¾"

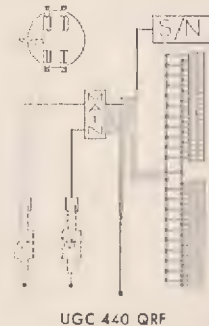
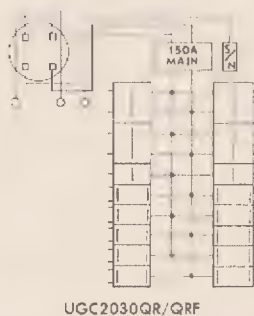
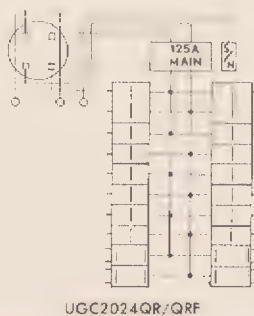
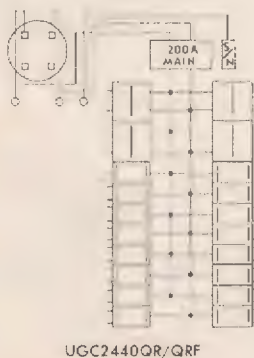
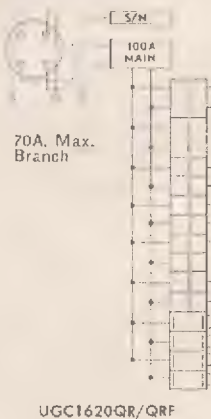
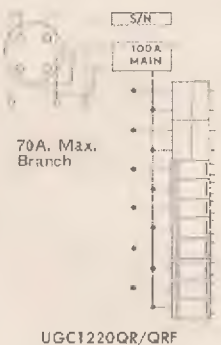
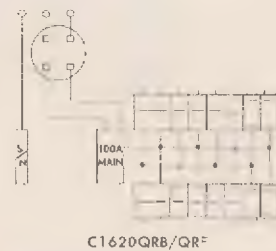
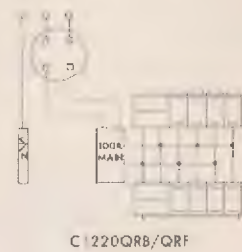
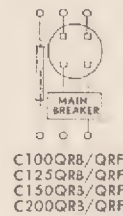
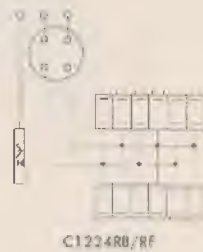
CM7-1QRB



RESIDENTIAL THRU 400 AMPS.—METER DEVICES

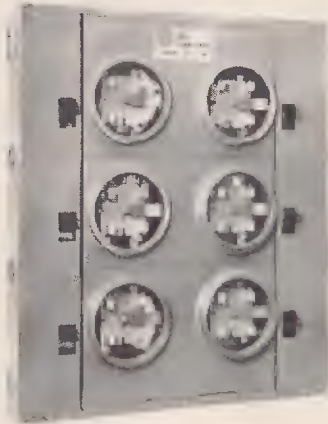
RAINTIGHT COMBINATION SERVICE ENTRANCE DEVICE

WIRING DIAGRAMS



UNITIZED **EZ STACK**® MULTI-METERING

A completely self-contained meter-center with up to six individual services. Rigid busbed throughout; no interconnections required. Service connects to top, bottom or side; load conduits connect to top, bottom, sides and back. Enclosures have external mounting provisions. Meter sockets are 4 jaw with provisions for potential 5th jaw at the 6 and 9 o'clock positions. Meter socket bases are constructed of an indestructible polyester glass fiber material. Each meter socket is supplied with a snap-type seal ring. Lock-off and sealing provisions are provided for each branch main breaker.



Indoor — Surface
Mounting
Cat. No. UEZ 166

INDOOR

INDOOR — 1 ϕ 3 W. — 100 A. METER SOCKETS

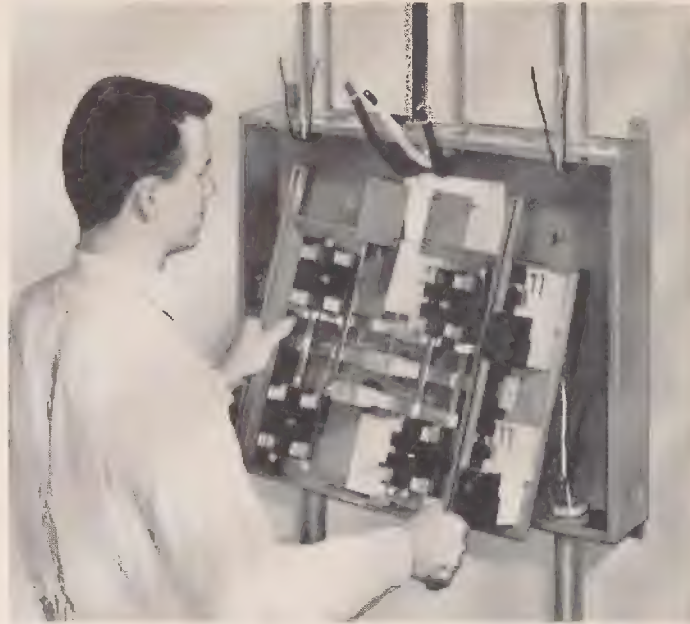
No. of Meters	Mains Rating	Max. Branch Rating	Catalog Number	Price	Line Lugs Per Phase AL/CU	Dimensions (Inches) W H D
3	225 A.	100 A.	UEZ134	\$116.	(1) 300MCM	14 $\frac{1}{2}$ x 31 $\frac{1}{2}$ x 5
4	225 A.	100 A.	UEZ144	140.	(1) 300MCM	28 $\frac{1}{2}$ x 24 $\frac{1}{2}$ x 5
	400 A.	100 A.	UEZ145	151.	(1) 600MCM & (1) 400MCM	
5	225 A.	70 A.	UEZ154	181.	(1) 300MCM	
	400 A.	100 A.	UEZ155	191.	(1) 600MCM & (1) 400MCM	28 $\frac{1}{2}$ x 33 $\frac{1}{2}$ x 5
6	400 A.	100 A.	UEZ165	231.	(1) 600MCM & (1) 400MCM	
	600 A.	100 A.	UEZ166	242.	(1) 600MCM & (1) 400MCM	

● Plug-in base for two-pole Type QO or Q1 breaker.
Order breakers separately from Page 2.

1 ϕ 3 W. — 125A/150A METER SOCKETS

No. of Meters	Mains Rating	Max. Branch Rating	Catalog Number	Price	Line Lugs Per Phase AL/CU	Dimensions (Inches) W H D
3	400 A.	125 A.	UEZ535-125	\$309.		18 $\frac{1}{2}$ x 42 x 5
	400 A.	150 A.	UEZ535-150			
4	400 A.	125 A.	UEZ545-125	409.		32 $\frac{1}{2}$ x 31 $\frac{1}{2}$ x 6 $\frac{1}{4}$
	400 A.	150 A.	UEZ545-150			
	400 A.	125 A.	UEZ555-125	491.	(1) 600MCM & (1) 400MCM	
	400 A.	150 A.	UEZ555-150			
5	400 A.	125 A.	UEZ565-125	516.		32 $\frac{1}{2}$ x 42 x 6 $\frac{1}{4}$
	600 A.	125 A.	UEZ566-125			
	600 A.	150 A.	UEZ566-150			
6	600 A.	125 A.	UEZ566-125	622.		
	600 A.	150 A.	UEZ566-150			

▲ Includes factory installed two-pole Type Q2 breaker.



Interior removes as a complete assembly by loosening one captive fastener. Removed interior assembly speeds attaching conduits and pulling wires. Meter jaws and other parts are protected from weather and construction hazards.

ACCESSORIES

Description	Cat. No.	Price
5th jaw kits include neutral terminal bar, mtg. hardware and instructions:		
2 — Unit Devices.....	SG109-2	\$4.60
3 — Unit Devices.....	SG109-3	5.80
4 — Unit Devices.....	SG109-4	7.10
5 — Unit Devices.....	SG109-5	8.40
6 — Unit Devices.....	SG109-6	9.60
Glass meter socket cover plate.....	29007	1.10
Automatic circuit-closing (factory installed).....	Add "C" to Cat. No.	Add \$3.40 per socket
Keeper terminal (factory installed).....	Order by description	Add \$1.40 per Socket
Terminal bar for attaching bonding conductor to enclosure: (One bar for 2 and 3 unit devices).... (Two bars for 4, 5 and 6 unit devices)	PK5GT A	1.20
Sealing Rings (Non-Standard): Snap-on Type Stainless Steel.....	29008DS	1.25
Latch-type Stainless Steel.....	29008G	2.00
Screw-type Aluminum.....	29008W	2.00

INTERCHANGEABLE HUBS

For Top Endwall of Devices with RB or RH Suffix

For		Conduit Size			
		1 $\frac{1}{2}$ "	2"	2 $\frac{1}{2}$ "	3"
UEZ124RB UEZ134RB	Cat. No.	B150	B200	B250	
	Price	\$3.20	\$5.50	\$9.60	
-RH Devices	Cat. No.		HH5	HJ5	HK5
	Price		\$5.50	\$9.60	\$9.60

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1 ϕ 3 W. — 100 A. METER SOCKETS — SURFACE and SEMI/FLUSH MOUNTING

No. of Meters	Mains Rating	Max. Branch Rating ●	Surface Mounting ‡				Semi/Flush Mounting				Line Lugs Per Phase AL/CU		
			Catalog Number	● Price	Dimensions (Inches)			Catalog Number	■ Price	Dimensions (Inches)			
					W	H	D			W		H	D
2	200 A.	100 A.	UEZ124-RB	\$ 99.	14½	x33½	x5	UEZ124RF	\$109.	17¼	x35¼	x5½	(1) 300MCM
3	225 A.	100 A.	UEZ134-RB	121.				UEZ134RF	140.				
4	225 A.	100 A.	UEZ144-RH	154.	28½	x24½	x5	UEZ144RF	172.	31¼	x27x6¼	(1) 300MCM	
	400 A.		UEZ145-RH	167.				UEZ145RF	185.				(1) 600MCM & (1) 400MCM
5	225 A.	70 A.	UEZ154-RH	199.	28½	x33½	x5	UEZ154RF	216.	31¼	x35¼	x6¼	(1) 300MCM & (1) 400MCM
	400 A.	100 A.	UEZ155-RH	211.				UEZ155RF	229.				
6	400 A.	100 A.	UEZ165-RH	246.				UEZ165RF	265.				
	600 A.		‡ UEZ166-RH	280.	UEZ166RF	302.							

1 ϕ 3 W. — 125 A./150 A. METER SOCKETS — SURFACE and SEMI/FLUSH MOUNTING

No. of Meters	Mains Rating	Max. Branch Rating▲	Surface Mounting ‡				Semi/Flush Mounting				Line Lugs Per Phase AL/CU		
			Catalog Number	▲ Price	Dimensions (Inches)			Catalog Number	▲ Price	Dimensions (Inches)			
					W	H	D			W		H	D
2	225 A.	125 A.	UEZ524RH-125	\$286.	18½ x42x5		UEZ524RF-125	\$249.	21¼ x44¼ x6¼	(1) 300MCM			
		150 A.	UEZ524RH-150				UEZ524RF-150						
3	400 A.	125 A.	UEZ535RH-125	321.			UEZ535RF-125	341.					
		150 A.	UEZ535RH-150				UEZ535RF-150						
4	400 A.	125 A.	†UEZ545RH-125	420.	32½ x31½ x6¼		UEZ545RF-125	447.	35¼ x33¼ x6¼	(1) 600 MCM & (1) 400MCM			
		150 A.	†UEZ545RH-150				UEZ545RF-150						
5	400 A.	125 A.	†UEZ555RH-125	510.			UEZ555RF-125	536.	35¼ x44¼ x6¼				
		150 A.	†UEZ555RH-150				UEZ555RF-150						
6	600 A.	125 A.	†UEZ566RH-125	538.	32½ x42x6¼		UEZ566RF-125	566.					
		150 A.	†UEZ566RH-150				UEZ566RF-150						
6	600 A.	125 A.	†UEZ566RH-125	543.			UEZ566RF-125	663.					
		150 A.	†UEZ566RH-150				UEZ566RF-150						
4	600 A.	200 A.	*UEZ546RH-200AP	697.	32½ x31½ x6¼					(2) 500 MCM			

● Plug-in base for two-pole Type QO or Q1 breaker. Order from Page 2.

▲ Includes factory installed two-pole Type Q2 breaker.

‡ Outdoor — surface mounted devices are furnished with a closing cap and require interchangeable hub. See Page 22.

+ Top endwall has provisions for two bolt-on interchangeable hubs.

* Device not UL listed.

Outdoor — Semi-Flush Mounting
UEZ134RF

Individual breaker covers on outdoor devices can be padlocked and/or sealed.



Outdoor — Surface Mounting
UEZ144RH

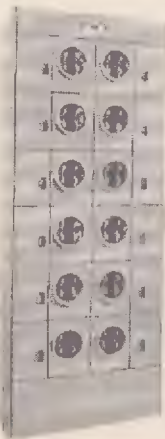
SCHEDULE A DISCOUNT

CUSTOMIZED EZ STACK METERING SWITCHBOARDS

FREE STANDING — COMPLETELY FACTORY ASSEMBLED

- Flexibility — A wide variety of standard metering components available including 100 and 200 Amp. sockets, 7 jaw, with 3-pole circuit breaker disconnects for 3 ϕ , 4 W. 120, 208 V. services. Individual sections with main bussing up to 2000 amps., Multi-sections bussed to 4000 amps. Main breakers, switches and other switchboard components can be incorporated in the metering center.
- Economy — application engineered, free-standing, factory assembled for minimum jobsite installation cost.

Price and descriptive information available from your local field engineer.



Double Row Construction



Single Row Construction



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VERTICAL EZ STACK®—INDOOR MULTI-METERING

ORDERING INSTRUCTIONS

A Vertical EZ Stack meter-center may be ordered (1) from the simplified price tables below — or, as (2) components, listed on the lower section of this page and on the following page. In either instance, required components will be furnished from the nearest Square D warehouse.

Simplified Pricing is based upon multiples having maximum quantity of meters per device. (100A — 4 high; 125/150A — 3 high)

SIMPLIFIED PRICING

PRICING AND ORDERING INSTRUCTIONS:

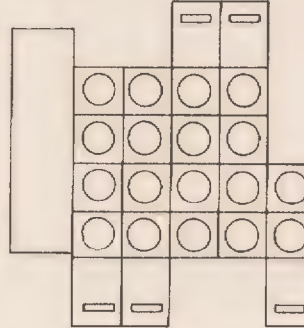
- Step 1 — Select main device.
 Step 2 — Add metered branches.
 Step 3 — Add special features: by-pass, accessory barriers, etc.
 Step 4 — For 15A thru 100A branches, select and add 2-pole Type QO or Q1 breakers from page 2.
 Note: Type Q2 2-pole breakers are included in 125A and 150A branches.
 Step 5 — Include sketch showing location of incoming service and arrangement of metered branches.

Example:

18 unit 120/240V 1φ-3W overhead, 600A main breaker, branches:
 16-100A and 2-60 A meter sockets on 8½" centers.

1 — 600 A main breaker	\$721.00	\$ 721.00
16 — 100A metered branches	41.00	738.00
16 — Q1200 circuit breakers	21.10	337.60
2 — QO260 circuit breakers	7.70	15.40

Total \$1812.00



Components Shipped:
 (per sketch based upon customer layout)

- 1—EZ316CB
- 2—EZ4B
- 2—EZ4T
- 1—EZ2B
- 1—EZSM316
- 4—EZMM316
- 16—Q1 2100
- 2—QO260

MAIN DEVICES

MAIN	Service Enters:	200A		400A		600A		▲800A		▲1000A		▲1200A	
		1φ-3W	3φ-4W	1φ-3W	3φ-4W	1φ-3W	3φ-4W	1φ-3W	3φ-4W	1φ-3W	3φ-4W	1φ-3W	3φ-4W
TERMINAL BOX	TOP	\$ 32.	\$ 38.			\$ 56.	\$ 61.					\$ 268.	\$ 320.
	BOTTOM	32.	38.			56.	61.					268.	320.
FUSIBLE SWITCH	TOP	98.†	131.†	\$257.	\$318.	509.	573.						
	BOTTOM	148.†	192.†	344. *	417. *	610. *	687.						
CIRCUIT BREAKER	TOP												
	BOTTOM	201.	275.	473.	563.	721.	891.	\$912.	\$1177.	\$1272.	\$1447.	1749.	1919.

▲Includes 600A cross bus for attaching meter devices to both the left and right sides.

*Includes EZUG Underground Terminal Box.

†200A Pull-Out.

METERED BRANCHES * — NON-CIRCUIT CLOSING

(Includes Interconnecting bus)

Service	100A Meter Sockets (Breakers not included)		125/150A Meter Sockets (Includes Q2 branch breakers)	
	8½" Centers		Meters on 8½" vertical and 10" horizontal centers	
1φ-3W	\$41.		\$130.	
▲3φ-4W	44.		131.	

*100A is maximum four-high and minimum two-high; 125A and 150A is maximum three-high and minimum two-high.

▲5th jaw included for 3-wire network meters on 3 phase-4 wire 120/208 V AC services.

SPECIAL FEATURES

Modifications and Accessories	Price
Manual by-pass... per socket — 100 A.	\$ 19.50
125/150A	23.00
Auto circuit closing... per socket.	3.40
Keeper-terminal... per socket	1.40
Anti-shorting protector... per socket.	.60
Glass socket-cover plate	1.10
200A House Panel with 2-pole Q2 breaker:	
with perch for utility test-switch	247.00
with link-type, manual by-pass	260.00
200A House Panel with 3-pole Q2 breaker:	
with perch for utility test-switch.	318.00
with link-type manual by-pass.	350.00

VERTICAL EZ STACK COMPONENTS

TERMINAL BOXES (EZTM, EZUS or SG104 Connector kits must be ordered separately from table on page 25.)

Incoming Feeder Location	Amp. Rating	1ϕ-3W — 120/240 V. AC				3ϕ-4W — 120/208 V. AC				AL-CU Line Lugs Per ϕ
		Catalog Number	Price	Dimensions		Catalog Number	Price	Dimensions		
				W	H			W	H	
Overhead	200	EZTB314	\$ 32.	8½	14½	EZTB414	\$ 38.	11	16	1-300 MCM
	400/600	EZTB316	56.	11	20	EZTB416	61.	14¼	21½	2-500 MCM
Underground	200	EZUG314	32.	8½	25½	EZUG414	38.	11	25½	1-300 MCM
	400/600	EZUG316	56.	11	31½	EZUG416	61.	14¼	31½	2-500 MCM
Overhead or Underground	*1200	EZTB319	268.	20	52	EZTB419	320.	20	52	3-600 MCM

*1200 Amp. Terminal Box accepts four horizontal 600A. bus connector kits max.

MAIN DISCONNECT SWITCHES* (EZSM or EZMSM Connector kits must be ordered separately from table on page 25.)

Ampere Rating	1Φ-3W 120/240 V. AC					3Φ-4W — 120/208 V. AC					AL-CU Line Lugs Per Φ
	Catalog Number		Price	Dimensions		Catalog Number		Price	Dimensions		
	Fusible	Non-Fused		W	H	Fusible	Non-Fused		W	H	
200★	EZ314P		\$ 98.	5½	28½	EZ414P		\$131.	8	15	1-200 MCM
400	E 315	EZ315NF	257.	11	34	EZ415	EZ415NF	318.	15	15	2-200 MCM
600	E 316	EZ316NF	509.	11	40	EZ416	EZ416NF	573.	15	40	3-200 MCM

★Pull-out Type.

*Underground service requires EZUG Terminal Box and EZUS Connector Kit. Select from appropriate tables.

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INDOOR MULTI-METERING — VERTICAL EZ STACK®

MAIN CIRCUIT BREAKER (200 thru 1000 Amp. Breakers Include Required Connector Kits)

Ampere Rating	1 ϕ -3W — 120/240 V. AC					3 ϕ -4W — 120/208 V. AC					Al-Cu Lugs Per ϕ
	Circuit Breaker Cat. No.			Dimensions		Circuit Breaker Cat. No.			Dimensions		
	Top Feed	Bottom Feed	Price	W	H	Top Feed	Bottom Feed	Price	W	H	
▲ 200	EZ314CB	EZ314CB	\$ 221.	10	22	EZ414CB	EZ414CB	\$ 298.	10	22	(1)-300 MCM
400	EZ315CB	EZ315CB	493.	11	33	EZ415CB	EZ415CB	586.	15	33	(1)-500 MCM*
600	EZ316CB	EZ316CB	741.	20	●38	EZ416CB	EZ416CB	914.	20	●38	(3)-500 MCM
● 800	EZ317CB	EZ317CB	952.	20	●38	EZ417CB	EZ417CB	1223.	20	●38	(3)-500 MCM
● 1000	EZ318CB	EZ318CB	1312.	20	●41	EZ418CB	EZ418CB	1493.	20	●41	(3)-500 MCM
▲ 1200	EZ319CB	EZ319CB	1749.	20	58	EZ419CB	EZ419CB	1919.	20	58	(4)-500 MCM

▲200A. main breaker furnished with set of flexible connectors which attach directly to either 8½" or 10-inch wide basic devices. Same device for top or bottom feed.
 ▲800A. and 1000A. main breaker connector kits attach basic device to both sides of main device as main must be located in center.
 †1200A. main breaker accepts two, three or four SG104 connector kits. Order separately from table below.
 *400A. lug will accept (2) - 250MCM Al-Cu per phase in lieu of (1) - 500 MCM.
 ●All UCB devices are 51 inches high.

BASIC METER-BREAKER DEVICE (EZMM Connector kits must be ordered separately from table below.)

No. of Units *	Sub Main Breaker Location	Vertical Bus Connects to Phases	100A. Meters on 8½" Centers Non-Circuit Closing†				125A. Meters on 10" Centers‡ Non-Circuit Closing†				150A. Meters on 10" Centers‡ Non-Circuit Closing†			
			Cat. No.	Price★	W	H	Cat. No.	Price▲	W	H	Cat. No.	Price▲	W	H
1ϕ-3W — 120/240V. AC SYSTEMS														
2	Top		EZ2T				EZ52T-125				EZ52T-150			
	Bottom		EZ2B	\$ 62.	8½	32	EZ52B-125	\$240.	10	33½	EZ52B-150	\$240.	10	33½
3	Top		EZ3T				EZ53T-125				EZ53T-150			
	Bottom		EZ3B	103.	8½	40½	EZ53B-125	370.	10	42	EZ53B-150	370.	10	42
4	Top		EZ4T											
	Bottom		EZ4B	144.	8½	49								

3-WIRE NETWORK METERS ON 3 ϕ -4W — 120/208 V. AC SYSTEMS

2 ϕ	Top	A-B B-C C-A	EZ2TA EZ2TB EZ2TC	\$ 65.	8½	32	EZ52TA-125 EZ52TB-125 EZ52TC-125	\$243.	10	33½	EZ52TA-150 EZ52TB-150 EZ52TC-150	\$243.	10	33½
	Bottom	A-B B-C C-A	EZ2BA EZ2BB EZ2BC				EZ52BA-125 EZ52BB-125 EZ52BC-125				EZ52BA-150 EZ52BB-150 EZ52BC-150			
3 ϕ	Top	A-B B-C C-A	EZ3TA EZ3TB EZ3TC	109.	8½	40½	EZ53TA-125 EZ53TB-125 EZ53TC-125	376.	10	42	EZ53TA-150 EZ53TB-150 EZ53TC-150	376.	10	42
	Bottom	A-B B-C C-A	EZ3BA EZ3BB EZ3BC				EZ53BA-125 EZ53BB-125 EZ53BC-125				EZ53BA-150 EZ53BB-150 EZ53BC-150			
4 ϕ	Top	A-B B-C C-A	EZ4TA EZ4TB EZ4TC	153.	8½	49								
	Bottom	A-B B-C C-A	EZ4BA EZ4BB EZ4BC											

*Unit consists of 4-jaw socket and snap-on type aluminum sealing ring.

†For automatic circuit closing type sockets add suffix "C" to catalog number, i.e. EZ2CT, and add \$3.40 per each socket. For manual circuit closing type add suffix "D" to catalog number, i.e. EZ2DTA, and add \$19.50 (100A.) or \$23.00 (125A./150A.) per each socket.

‡For 3 ϕ -4W systems, 5th jaw, Cat. No. SG66 is furnished for each socket. 5th jaw may be field mounted in either left, right, or bottom position.

▲100 ampere units have space for two pole plug-in type Q0 or Q1 Breakers 15 thru 100 amperes. Order breakers separately from page 2.

▲125 and 150 ampere units have factory installed type Q2 breakers. Price shown has breaker included.

●125 and 150 A. units have sockets on 10" horizontal centers and 8½" vertical centers.

BUS KITS FOR INTERCONNECTING DEVICES (All Breakers, except 1200A, Include Required Connector Kits)

To Interconnect	Rating	100A. 8½" Wide Units				125A./150A. 10" Wide Units			
		1 ϕ -3W		3 ϕ -4W		1 ϕ -3W		3 ϕ -4W	
		Cat. No.	Price	Cat. No.	Price	Cat. No.	Price	Cat. No.	Price
Basic Device to Basic Device (100A. or 150A.).	200A.	EZMM314	\$28.	EZMM414	\$23.	EZMM316	\$20.	EZMM416	\$23.
	400/600A.	EZMM316	20.	EZMM416	23.	EZMM316	20.	EZMM416	23.
10" Basic Device to 8½" Basic Device.	600A.	EZMM5316	20.	EZMM5416	23.	EZMM5316	20.	EZMM5416	23.
100A. Main Switch to Basic Device.	200A.	EZSM314	20.	EZSM414	23.				
400A. or 600A. Main Switch to Basic Device either Right or Left.	400/600A.	EZSM316	20.	EZSM416	23.	EZSM316	20.	EZSM416	23.
Both Right and Left.		EZSM316	40.	EZSM416	46.	EZSM316	40.	EZSM416	46.
Terminal Box (Overhead or Underground) to Basic Device.	200A.	EZTM314	20.	EZTM414	23.	EZTM316	20.	EZTM416	23.
	400/600A.	EZTM316	20.	EZTM416	23.	EZTM316	20.	EZTM416	23.
1200 Amp. Terminal Box or Main Breaker to Basic Device.	600A.	SG104-1	20.	SG104-3	28.	SG104-2	20.	SG104-4	23.
Underground Terminal Box to Main Switch.	200A.	EZUS314	18.	EZUS414	23.				
	400A.	EZUS315	31.	EZUS415	38.	EZUS315	31.	EZUS415	38.
	600A.	EZUS316	45.	EZUS416	53.	EZUS316	45.	EZUS416	53.

ACCESSORIES

Description	Cat. No.	Price	Description	Cat. No.	Price
Manual By-Pass Kit — Field Installable			5th Jaw for 200A. Meter Unit — Field Installable.	MSA-2U	\$ 2.70
8½" Wide, Breakers Top 100A. Basic Device.	EZDT	\$19.50	5th Jaw for 100A. & 150A. Units — Field Installable	SG66	1.40
8½" Wide, Breakers Bottom 100A. Basic Device.	EZDB	19.50	Vertical Breaker Barrier Extension — 100 A. Units.	SG57-3	1.70
Breakers Top 150A. Basic Device	EZDT-5	23.00	Vertical Breaker Barrier Extension — 150A. Units.	SG106	2.60
Breakers Bottom 150A. Basic Device	EZDB-5	23.00	Box Ratchet Wrench — Assembly Tool	EZRW	12.60
Automatic Circuit Closing Kit — Field Installable			Circuit Breaker Closing Plate — 100A. Units — 2 Req'd.	Q01CP	.60
All 100A. Basic Devices.	EZ10C	13.10	Glass Meter Socket Cover Plate.	29007	1.10
Anti-Shorting Protector — 1 Per Socket.	EZSP	.60	Sealing Rings (Non-standard)		
200 Ampere House Meter with Interconnecting Cables			Snap-on Type Stainless Steel.	29008DS	1.25
With Utility Test Perch and 2 Pole Breaker.	EZ200H	247.00	Latch-Type Stainless Steel.	29008G	2.60
With Link-type Manual By-Pass and 2 Pole Breaker.	EZ200HM	260.00	Screw-Type Aluminum.	29008W	2.60
With Utility Test Perch and 3 Pole Breaker.	EZ4200H	318.00	Keeper Terminal (one per socket).	EZKT	1.40
With Link-type Manual By-Pass and 3 Pole Breaker.	EZ4200HM	350.00			



EZ STACK is a Registered Trademark of Square D Company.

SCHEDULE A DISCOUNT

PAGE 25

EZ METER-pak™ — OUTDOOR MULTI-METERING

MAIN FUSIBLE SWITCH

Main Fusible Switches are suitable for either top or bottom feed.

Ampere Rating	1Ø-3W-120/240 V. AC		3Ø-4W-120/208 V. AC		Line Lugs Wire Size AL-CU	Dimensions	
	Catalog Number★	Price	Catalog Number★	Price		H	W
400	MEZ225NR	\$ 340.	MEZ325NR	\$ 390.	(1) 800&(1) 300MCM	59½	18½
600	MEZ226NR	650.	MEZ326NR	960.	(2) 500MCM	59½	21½
800	MEZ227NR	1070.	MEZ327NR	1340.			
1200	MEZ228NR	1430.	MEZ328NR	1660.			

MAIN CIRCUIT BREAKER

Main Circuit Breakers can be top or bottom feed.

Ampere Rating	1Ø-3W-120/240 V. AC		3Ø-4W-120/208 V. AC		Line Lugs Wire Size AL-CU	Dimensions	
	Catalog Number★	Price	Catalog Number★	Price		H	W
400	MEZ22400NR	\$ 590.	MEZ32400NR	\$ 670.	(1) 3/0-500MCM	59½	21½
600	MEZ22600NR	900.	MEZ32600NR	1050.	(2) 3/0-250MCM	59½	21½
800	MEZ22800NR	1210.	MEZ32800NR	1440.	(3) 3/0-300MCM	59½	21½
1000	MEZ221000NR	1510.	MEZ321000NR	1730.	(3) 3/0-500MCM	59½	21½
1200	MEZ221200NR	2320.	MEZ321200NR	2770.	(3) 3/0-300MCM		
1600	MEZ221600NR	2580.	MEZ321600NR	3080.			

★Main bussing rated 800 ampere. 800 ampere and smaller main disconnects are provided with an interconnecting bus kit to feed meter/breaker units located either to the right or left. Disconnects larger than 800 ampere are provided with interconnecting bus kits to feed meter/breaker units on each side.



Completely Assembled Meter Center consisting of 400A. Main Fusible Switch and 12 Meter Socket/Breaker Positions.

TERMINAL BOXES†

Service	Ampere Rating	Catalog Number	Price	Dimensions	
				H	W
1Ø-3W-120/240 V. AC	800	MEZ3800TBR	\$ 45.	34½	18½
	1600	MEZ31600TBR	120.	45	22½
3Ø-4W-120/208 V. AC	800	MEZ4800TBR	70.	34½	18½
	1600	MEZ41600TBR	170.	45	22½

†Terminal Boxes are suitable for either top or bottom feed. 800 ampere terminal boxes includes interconnecting bus to feed meter/breaker units located either to the right or left. 1600 ampere units include bus kits to feed meter/breaker units located right and left. Lugs must be ordered separately from adjacent table.

TERMINAL BOX LUG KITS

Number of Lugs Per Kit	Number of Wires Per Kit	Wire Size AL-CU	Catalog Number	Price
3	1	350MCM to 800MCM	MEZ31800LK	\$18.
4	1	350MCM to 800MCM	MEZ41800LK	24.
3	2	2/0 to 500MCM	MEZ32500LK	30.
4	2	2/0 to 500MCM	MEZ42500LK	40.
3	3	2 to 600MCM	MEZ33600LK	75.
4	3	2 to 600MCM	MEZ43600LK	100.
3	4	2 to 600MCM	MEZ34600LK	90.
4	4	2 to 600MCM	MEZ44600LK	120.

BASIC METER/BREAKER DEVICES 100 ampere max. non-circuit closing. 800 ampere mains rated basic meter/breaker unit consists of completely bussed 100 ampere socket and two pole plug-on breaker space. All sockets on 10 inch centers minimum and include snap-on type aluminum sealing rings. Load wiring may exit top or bottom of unit.

Number of Meters	1Ø-3W-120/240 V. AC Systems		3-Wire Network Meters on 3Ø-4W-120/208 V. AC Systems		Dimensions	
	Catalog Number▲	Price	Catalog Number▲	Price	H	W
3	MEZ-33-100R	\$140.	MEZ-43-100R	\$150.	59½	14½
4	MEZ-34-100R	190.	MEZ-44-100R	200.	59½	14½
6	MEZ-36-100R	280.	MEZ-46-100R	300.	59½	23½
7	MEZ-37-100R	330.	MEZ-47-100R	360.	59½	23½
8	MEZ-38-100R	380.	MEZ-48-100R	410.	59½	23½

▲Consists of 4 jaw socket with provisions for field installable 5th jaw.

■Units are factory bussed for proper phase balance. Example: 8 gang unit has 3-AB, 3-BC and 2-AC socket phase connectors. 5th jaw is factory installed



Fusible 400A. Main Switch



8 Unit 100A. Meter Socket/Breaker Device



4 Unit 100A. Meter Socket/Breaker Device

ACCESSORIES

Description	Catalog Number	Price	Description	Catalog Number	Price
GROUND BUS KIT Provides equipment ground connections and bonding continuity between components.			GROUND BUS KIT 400-1000 ampere main breaker 1600 ampere main breaker	MEZ 1000VBGB MEZ 1600VBGB	\$14. 28.
4 meter basic device box	MEZ4MGB	\$ 7.	HORN TYPE MANUAL BY-PASS KITS Kit includes ringless meter-socket cover and connectors for wire jumper type by-pass.		
8 meter basic device box	MEZ8MGB	15.			
800 ampere terminal box	MEZ800TBGB	12.			
1600 ampere terminal box	MEZ1600TBGB	14.			
400 ampere main disconnect switch	MEZ400MSGB	12.	Left side 100 ampere outdoor meter-socket	MEZ 100HBL-R	5.
600 ampere main disconnect switch	MEZ600MSGB	14.	Right side 100 ampere outdoor meter-socket	MEZ 100HBR-R	5.
800 ampere main disconnect switch	MEZ800MSGB	22.	5th JAW KIT	SG109	1.50
1200 ampere main disconnect switch	MEZ1200MSGB	28.			

NEW PRODUCT — Availability to be announced

EZ METER-PAK is a Trademark of Square D Company.



SAFETY SWITCHES

Big new switches for the Square D heavy duty line!

400A - 800A - 1200A

400 AMPERE

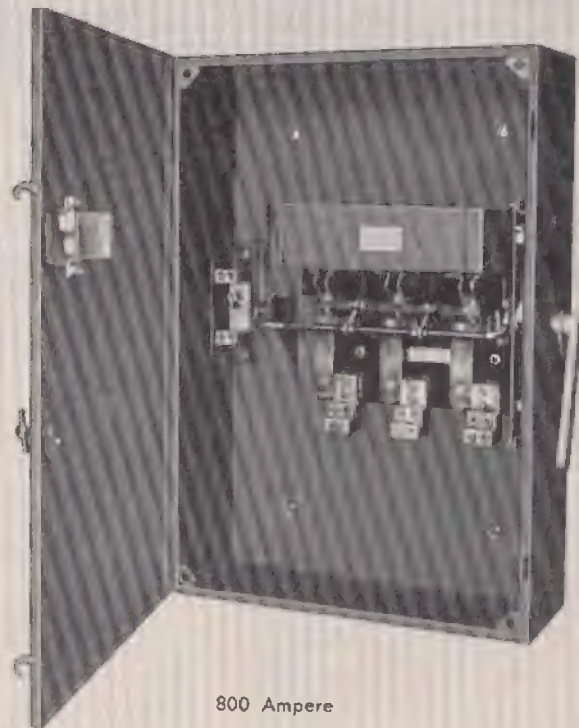
- Flange Mounted Handle
- Lugs for 750MCM AL/CU Wire
- NEMA 1
- NEMA 3R
- NEMA 12 with Single-Stroke Cover Sealing
- NEMA 4/NEMA 5 in Stainless Steel Enclosure
- Quick-Make — Quick-Break
- Visible Blades
- Indicator Handle
- Field Installable Neutral
- Maximum HP Ratings 100 HP AC — 50 HP DC
- Field Installable Electrical Interlock Kit
- Large Gutter Space



400A (Nema 1 Enclosure)

800 & 1200 AMPERE

- Quick-Make — Quick-Break
- Provisions for Single Class L Fuses Per Phase
- Visible Blade
- Indicator Handle
- HP Rated
- Dual Interlock
- For Use on Systems with Up to 100,000 Amp. Available Fault Current
- Front Removable Lugs
- Replaceable Arc Tips on Switch Blades
- Field Installable Neutral
- NEMA 1 and 3R Enclosures
- Fusible and Non Fused



800 Ampere

See Listing of These Three Great New Switches on Pages 30, 31, 32



GENERAL DUTY SAFETY SWITCHES


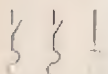
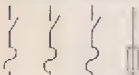
General Duty Safety Switches are designed for residential and commercial applications where price is limiting and the service factor not great — such as lighting, air conditioning and appliance loads. These switches are UL listed, File E2875 and meet or exceed NEMA KS 1-1969 for Type GD.

General Duty switches, 60-600 ampere meet W-S-865c for Type LD or ND with single interlock in NEMA 1 enclosure and Type LD without interlock in NEMA 3R enclosure. 30 ampere switches meet Federal Specifications W-S-865c for Type LD switches.

FUSIBLE

SINGLE THROW

CHRYSLER

System	Amp.	Fuse	NEMA 1 Indoor Cat. No.	Price	NEMA 3R Raintight Cat. No. ■	Price	Horsepower Rating			
							Standard		Maximum	
							1φ	3φ	1φ	3φ
2 WIRE S/N (1 BLADE, 1 FUSE) 120 VOLTS AC										
	30	Plug	D111N	\$ 6.40	D111NRB	\$14.20	1/2		2	
	30	Cart.	D121N	7.10	D121NPB	16.70	1/2		2	
2 POLE — 120/240 VOLTS AC (PLUG) — 240 VOLTS AC (CART.)										
	30	Plug	D211	\$ 8.00	D211RB	\$16.50	1 1/2		3	
	30	Cart.	D221	9.40	D221RB	16.70	1 1/2		3	
	60		D222N	18.90	D222NRB	30.00	3		10	
	100		D223N	39.00	D223NRB	45.00	7 1/2		15	
	200		D224N	83.00	D224NRB	113.00	15			
	400		D225N	233.00						
	600		D226N	467.00						
3 WIRE — S/N (2 BLADE — 2 FUSES) 120/240 VOLTS AC (PLUG) — 240 VOLTS AC (CART.)										
	30	Plug	D311N	\$ 8.30	D311NRB	\$16.70	1 1/2	1 1/2	2	3
	30	Plug	D311NWH	11.30			1 1/2	1 1/2	2	3
	30	Cart.	D321N	10.80	D321NRB	17.50	1 1/2	3	3	7 1/2
	60		D322N	18.90	D322NRB	30.00	3	7 1/2	10	15
	100		D323N	39.00	D323NRB	45.00	7 1/2	15	15	30
	200		D324N	83.00	D324NRB	113.00	15	25		50
	400		D325N	233.00	D325NR	315.00				
	600		D326N	467.00	D326NR	600.00				
3 POLE, 120 VOLTS AC (PLUG) — 240 VOLTS AC (CART.)										
	30	Plug	D311	\$14.20	D311RB	\$26.00	1 1/2	1 1/2		3
	30	Cart.	D321	18.30	D321RB	27.00	1 1/2	3		7 1/2
	60		D322	30.00	D322RB	42.00	3	7 1/2	10	15
	100		D323	53.00	D323RB	76.00	7 1/2	15	15	30
	200		D324	114.00	D324RB	137.00	15	25		50
	400		D325	250.00	D325R	324.00				
	600		D326	500.00	D326R	699.00				
4 WIRE — S/N (3 BLADES — 3 FUSES) — 240 VOLTS AC (CART.)										
	30	Cart.	D321N	\$18.30	D321NRB	\$27.00		3		7 1/2
	60		D322N	30.00	D322NRB	42.00	3	7 1/2	10	15
	100		D323N	53.00	D323NRB	76.00	7 1/2	15		30
	200		D324N	114.00	D324NRB	137.00	15	25		50
	400		D325N	284.00	D325NR	355.00				
	600		D326N	533.00	D326NR	731.00				
4 POLE, 240 VOLTS AC (CART.)										
	30	Cart.	D421	\$27.00				3		10
	60		D422	49.00				7 1/2		20
	100		D423	115.00				15		30
	200		D424	192.00				30		50

TERMINAL LUG SIZES

Ampere Rating	Min. Wire	Max. Wire
30	14	8
60	14	2
100	6	1/0
200	4	300 MCM
400	3/0	600 MCM or 2-250 MCM
600	3/0	2-600 MCM or 4-250 MCM

Lugs for all 30 Amp. switches and all 4-pole switches are U/L listed for Cu conductors only.

Lugs for 60-600 Amp. 2-pole and 3-pole switches are U/L listed for Cu or Al conductors.



Fusible Interior
200 Amp.





Fusible Interior
30 Amp. Plug Fuse



Enclosure

NOT FUSIBLE

SINGLE THROW

2 POLE, 240 VOLTS AC										
	30		Use 3 Pole Switch		DU221PB	\$16.70			3	
	60				DU222PB	33.00			10	
	100								15	
	200								25	
	400									
600										
3-POLE, 240 VOLTS AC										
	30		DU321	\$14.20	DU321RB	\$27.00			3	7 1/2
	60		DU322	19.10	DU322RB	42.00			10	15
	100		DU323	45.00	DU323RB	76.00			15	30
	200		DU324	83.00	DU324RB	137.00			25	50
	400		DU325	201.00						50
	600		DU326	383.00						

■ Type RB Raintight enclosures have a bolt-on closing cap factory installed.
Order hubs separately from Table page 31. See page 15 for details.



GENERAL DUTY SAFETY SWITCHES

FUSIBLE

ROTOR DISC TYPE



Rotor Disc Switch

System	Amp.	Fuse	NEMA 1 Indoor	Price	Horsepower Rating			
					Standard		Maximum	
					1Φ	3Φ	1Φ	3Φ
2 WIRE S/N (1 BLADE, 1 FUSE) 120 VOLTS AC								
	30	Plug	T111N	\$ 6.40	1/2		2	
	30	Plug	T111NWH	7.50	1/2		2	
2 POLE 120/240 VOLTS AC (PLUG) — 240 VOLTS AC (CART.)								
	30	Plug	T211	\$ 8.00	1 1/2		3	
	30	Plug	T211WH	9.40	1 1/2		3	
	30	Plug	T211-2 *	17.50				
	30	Plug	T211-2WH *	20.40				
	30	Cart.	T221	9.40	1 1/2		3	
3 WIRE S/N (2 BLADES — 2 FUSES) 120/240 VOLTS AC (PLUG)—240 VOLTS AC (CART.)								
	30	Plug	T211N	\$ 8.30	1 1/2		3	
	30	Plug	T211NWH	9.80	1 1/2		3	
	30	Cart.	T221N	10.80	1 1/2	3	3	7 1/2

WH suffix indicates that switch has dead front shield over interior. 120 or 120/240 volts AC.

*Dual water heater switch — two T211's in one box.

APPROXIMATE DIMENSIONS AND SHIPPING WEIGHTS

Catalog Number	Wt. (Lbs.)	Overall Dimensions				Std. Pack.	Catalog Number	Wt. (Lbs.)	Overall Dimensions				Std. Pack.
		H	W	W/H	D				H	W	W/H	D	
D111N	3 1/4	7 3/4	5 1/8	5 7/8	4	5	D324NRB	34	19 1/2	13 1/4	14 3/8	7 1/4	1
D111NRB	5	9	5 1/8	6 7/8	4 1/8	5	D325	90	28 1/2	21 1/2	24 1/2	10 1/2	1
D121N	3	7 3/4	5 1/8	5 7/8	4	5	D325N	90	28 1/2	21 1/2	24 1/2	10 1/2	1
D121NRB	5	9	5 1/8	6 7/8	4 1/8	5	D325R	152	29	22 3/4	25 1/2	10 7/8	1
D211	3	7 3/4	5 1/8	5 7/8	4	5	D325NR	170	29	22 3/4	25 1/2	10 7/8	1
D211N	3 1/2	7 3/4	5 1/8	5 7/8	4	5	D326	212	33 3/8	26 1/2	29 1/2	11 1/2	1
D211NRB	5	9	5 1/8	6 7/8	4 1/8	5	D326N	270	33 3/8	26 1/2	29 1/2	11 1/2	1
D211NRB	5	9	5 1/8	6 7/8	4 1/8	5	D326R	264	33 3/8	27 3/4	29 5/8	11 7/8	1
D211NWH	3 3/4	7 3/4	5 1/8	5 7/8	4	5	D326NR	266	33 3/8	27 3/4	29 5/8	11 7/8	1
D221	3 1/4	7 3/4	5 1/8	5 7/8	4	5	D421	11	9 7/8	9 1/8	10 5/8	5 1/2	1
D221N	3 1/4	7 3/4	5 1/8	5 7/8	4	5	D422	20	15 7/8	11 3/8	13	5 1/4	1
D221NRB	5	9	5 1/8	6 7/8	4 1/8	5	D423	38	19 3/8	14 3/8	16 1/2	7 1/4	1
D221NRB	5	9	5 1/8	6 7/8	4 1/8	5	D424	65	24 3/8	17	19 1/2	7 1/4	1
D222N	9	11 1/4	7 7/8	8 3/4	4 3/4	1	DU221RB	5	9	5 1/2	6 1/2	4 1/2	5
D222NRB	11	12 1/4	7 7/8	8 1/2	5	1	DU222RB	10	12 7/8	7 7/8	8 1/2	5	1
D223N	14	16 1/2	9 3/8	9 1/2	5 1/2	1	DU321	5	8 7/8	6 7/8	7 1/2	4 1/4	5
D223NRB	16	17 1/4	8 1/2	10 1/2	5 7/8	1	DU321RB	7	9 3/8	7 3/8	8 1/4	4 7/8	5
D224N	29	20 1/4	13 1/2	13 1/2	7	1	DU322	9	11 1/4	7 7/8	8 3/8	4 3/4	1
D224NRB	33	19 1/2	13 1/4	14 1/2	7 1/4	1	DU322RB	11	12 1/4	7 7/8	8 1/2	5	1
D225N	80	28 1/2	16 1/2	19 1/2	10 1/2	1	DU323	14	16 1/2	9 1/2	9 1/2	5 1/2	1
D225NR	149	33 3/4	21 1/2	23 1/2	11 7/8	1	DU323RB	17	17 1/4	8 1/2	10 1/2	5 7/8	1
D226N	200	33 3/8	20 1/2	23 1/2	11 1/2	1	DU324	29	20 1/2	13 1/2	13 1/2	7	1
D226NR	246	33 3/8	21 3/8	23 1/2	11 7/8	1	DU324RB	33	19 1/2	13 1/4	14 1/2	7 1/4	1
D311	5	8 7/8	6 3/8	7 1/2	4 1/4	5	DU325	84	28 1/2	21 1/2	24 1/2	10 1/2	1
D311RB	7	9 3/8	6 7/8	7 1/2	4 7/8	5	DU326	140	33 3/8	26 1/2	29 1/2	11 1/2	1
D321	4 1/2	8 7/8	6 7/8	7 1/2	4 1/4	5	T111N	1 3/4	6 1/8	4		2 3/8	10
D321N	4 1/2	8 7/8	6 7/8	7 1/2	4 1/4	5	T111NWH	1 3/4	6 1/8	4		2 3/8	10
D321RB	7	9 3/8	7 3/8	8 1/2	4 7/8	5	T211	1 3/4	6 1/8	4		2 3/8	10
D321NRB	6 1/2	9 3/8	7 3/8	8 1/2	4 7/8	5	T211N	2	6 1/8	4		2 3/8	10
D322	9	11 1/4	7 7/8	8 3/8	4 3/4	1	T211WH	1 3/4	6 1/8	4		2 3/8	10
D322RB	11	12 1/4	7 7/8	8 1/2	5	1	T211NWH	2	6 1/8	4		2 3/8	10
D322NRB	9	11 1/4	7 7/8	8 3/8	4 3/4	1	T211-2	3	6 3/8	7 1/2		3 3/8	1
D323	14	15 1/2	9 3/8	9 1/2	5 3/8	1	T211-2WH	3	6 3/8	7 1/2		3 3/8	1
D323N	14	15 1/2	9 3/8	9 1/2	5 3/8	1	T221	2	6 1/8	4		2 3/8	10
D323RB	16	17 1/4	8 1/2	10 1/2	5 7/8	1	T221N	2	6 1/8	4		2 3/8	10
D323NRB	16	17 1/4	8 1/2	10 1/2	5 7/8	1							
D324	30	20 1/4	13 1/2	13 1/2	7	1							
D324RB	34	19 1/2	13 1/4	14 1/2	7 1/4	1							
D324N	30	20 1/4	13 1/2	13 1/2	7	1							



HEAVY DUTY SAFETY SWITCHES — VISIBLE BLADES GENERAL PURPOSE — RAIN-TIGHT — SPECIAL PURPOSE ENCLOSURES

General Purpose and Rain-tight Visible Blade Heavy Duty Safety Switches are designed for application where performance and continuity of service are required. They meet Federal Specification W-S-865c for Heavy Duty Switches and are UL listed: File E2875. This line meets NEMA KS1-1957 for Type ND. The NEMA 4 and 5 and NEMA 12 devices meet NEMA KS1-1969 for Type HD.

SINGLE THROW FUSIBLE

Systems	Amps.	NEMA 1 Indoor		NEMA 3R Rain-tight		VISIBLE BLADE NEMA 4 and 5 Dust-tight, Water-tight D-Cast Enclosure DS-Stainless Steel		NEMA 12 JIC-Mill & Foundry Type Single Stroke Cover Sealing			Horsepower Ratings						Amps.
		Type RB		Type RB		Dust-tight, Water-tight D-Cast Enclosure DS-Stainless Steel		With Knockouts	Without Knockouts	Price	240 V. AC				DC		
		Cat. No.	Price	Cat. No.	Price	Cat. No.	Price	Cat. No.	Cat. No.		Std.	Max.	250 V.				
											1φ	3φ	1φ	3φ	Std.	Max.	
2 POLE, 240 VOLTS AC — 250 VOLTS DC																	
	30	45251	\$ 22.80	H221RB	\$ 42.00	H221D or DS	\$189.00	H221A	H221AWK	\$ 42.00	1 1/2	3	5	5	30		
	30	H221	22.80							51.00	1 1/2	3	5	5	30		
	30	*H221-2	38.00					*H221-A	*H221-AWK	51.00	1 1/2	3	5	5	30		
	60	H222	43.00	H222RB	78.00	H222D or DS	204.00	H222A	H222AWK	56.00	3	7 1/2	10	10	60		
	100	H223	65.00	H223RB	100.00	H223D or DS	447.00	H223A	H223AWK	83.00	7 1/2	15	20	20	100		
	200	H224	120.00	H224RB	144.00	H224D or DS	614.00	H224A	H224AWK	138.00	15		40	40	200		
	400	H225	247.00	H225NR	352.00	H225DS	1247.00	H225A	H225AWK	311.00			50	50	400		
	600	H226	492.00	H226NR	660.00	H226WP	1780.00	+H226A	+H226AWK	544.00					600		
800	H227	761.00	H227R	1100.00													
1200	H228	1053.00	H228R	1500.00													
3 WIRE S/N (2 BLADES 2 FUSES) 240 VOLTS AC — 125, 250 VOLTS DC																	
	30	H221N	\$ 22.80	H221NRB	\$ 42.00	H221ND or NDS	\$175.00	H221NA	H221NAWK	\$ 48.00	1 1/2	3	5	5	30		
	30	H222N	43.00	H222NRB	78.00	H222ND or NDS	212.00	H222NA	H222NAWK	61.00	3	7 1/2	10	10	60		
	30	H223N	65.00	H223NRB	100.00	H223ND or NDS	461.00	H223NA	H223NAWK	88.00	7 1/2	15	20	20	100		
	100	H224N	120.00	H224NRB	144.00	H224ND or NDS	633.00	H224NA	H224NAWK	153.00	15	25	40	40	200		
	200	H225N	247.00	H225NR	352.00	H225NDS	1274.00	H225NA	H225NAWK	345.00			50	50	400		
	400	H226N	492.00	H226NR	660.00	H226NWP	1815.00	+H226NA	+H226NAWK	576.00	50	50	100	100	600		
	600	H227N	761.00	H227NR	1100.00												
	1200	H228N	1118.00	H228NR	1500.00												
3 POLE, 240 VOLTS AC																	
	30	45351	\$ 28.00	H321RB	\$ 51.00	H321D or DS	\$179.00	H321A	H321AWK	\$ 51.00	3	7 1/2	10	10	30		
	30	H321	28.00							81.00	3	7 1/2	10	10	30		
	30	*H321-2	46.00					*H321-A	*H321-AWK	81.00	3	7 1/2	10	10	30		
	60	H322	49.00	H322RB	82.00	H322D or DS	220.00	H322A	H322AWK	78.00	7 1/2	15	20	20	60		
	100	H323	78.00	H323RB	118.00	H323D or DS	470.00	H323A	H323AWK	112.00	15	25	40	40	100		
	200	H324	134.00	H324RB	162.00	H324D or DS	661.00	H324A	H324AWK	187.00	25	40	60	60	200		
	400	H325	310.00	H325NR	392.00	H325DS	1287.00	H325A	H325AWK	387.00	50	50	100	100	400		
	600	H326	559.00	H326NR	783.00	H326WP	1843.00	+H326A	+H326AWK	610.00	75	75	100	100	600		
800	H327	1033.00	H327NR	1402.00													
1200	H328	1814.00	H328NR	1809.00													
4 WIRE S/N (3 BLADES 3 FUSES) 240 VOLTS AC																	
	30	H421N	\$ 28.00	H421NRB	\$ 51.00	H421ND or NDS	\$186.00	H421NA	H421NAWK	\$ 58.00	3	7 1/2	10	10	30		
	30	H422N	49.00	H422NRB	82.00	H422ND or NDS	228.00	H422NA	H422NAWK	78.00	7 1/2	15	20	20	60		
	30	H423N	78.00	H423NRB	118.00	H423ND or NDS	485.00	H423NA	H423NAWK	126.00	15	25	40	40	100		
	100	H424N	134.00	H424NRB	162.00	H424ND or NDS	679.00	H424NA	H424NAWK	181.00	25	40	60	60	200		
	200	H425N	344.00	H425NR	392.00	H425NDS	1287.00	H425NA	H425NAWK	400.00	50	50	100	100	400		
	400	H426N	591.00	H426NR	783.00	H426WP	1843.00	+H426NA	+H426NAWK	644.00	75	75	100	100	600		
	600	H427N	1099.00	H427NR	1402.00												
	1200	H428N	1809.00	H428NR	1809.00												
4 POLE, 240 VOLTS AC																	
	30	*H421-2	\$ 55.00					*H421-2A	*H421-2AWK	\$ 73.00	3	10	10	10	30		
	60	H422	76.00					H422A	H422AWK	88.00	7 1/2	20	20	20	60		
	100	H423	120.00					H423A	H423AWK	145.00	15	30	30	30	100		
	200	H424	216.00					H424A	H424AWK	254.00	30	50	50	50	200		
	400	H425	412.00					H425A	H425AWK	486.00	60	50	50	50	400		
	600	H426	739.00					+H426A	+H426AWK	839.00					600		

(Refer to Page 31 for footnotes.) • Use Class L fuse. Not U/L listed for DC.



NEMA 1



NEMA 3R



NEMA 4 and 5
Stainless Steel



NEMA 4 and 5
Cast Aluminum Enclosure



NEMA 12



VISIBLE BLADES SAFETY HANDLE





HEAVY DUTY SAFETY SWITCHES

GENERAL PURPOSE — RAIN TIGHT — SPECIAL PURPOSE ENCLOSURES

NEMA 12 and NEMA 4 & 5 stainless steel safety switches feature single stroke cover sealing. The cover must be properly sealed to operate the switch. This mechanism meets JIC requirements. All Visible Blade Heavy Duty Safety Switches feature Quick-make, Quick-break operating mechanism and full cover interlock.

600
VOLT

SINGLE THROW — FUSIBLE

System	Amps.	NEMA 1 Indoor		NEMA 3R Raintight		VISIBLE BLADE NEMA 4 and 5 Dust-tight, Water-tight D-Cast Enclosure DS-Stainless Steel		NEMA 12 JIC-Mill & Foundry Type Single Stroke Cover Sealing			HORSEPOWER RATINGS						Amps.
		Catalog Number	Price	Type RB		Cat. No.	Price	With Knockouts		Price	480 V AC		600 V AC		600 V DC		
				Catalog Number	Price			Std.	Max.		Std.	Max.	Std.	Max.			
2 POLE, 480 VOLTS AC — 600 VOLTS AC OR DC																	
	30	H261	\$ 49.	Use 3 Pole Switch for 2 Pole Application	H261D or DS	\$ 210.	H261A	H261AWK	\$ 68.	3	7 1/2	3	10	10	15	30	
	60	H262	59.		H262D or DS	236.	H262A	H262AWK	73.	5	20	10	25	10	25	60	
	100	H263	109.		H263D or DS	462.	H263A	H263AWK	122.	10	30	15	40	20	20	100	
	200	H264	159.		H264D or DS	647.	H264A	H264AWK	167.	25	50	30	50	30	30	200	
	400	H265	382.		H265DS	1287.	H265A	H265AWK	382.							400	
	600	H266	503.		H266WP	1843.	H266A	H266AWK	603.							600	
	800	H267	933.												800		
	1200	H268	1313.												1200		
3 POLE, 480 VOLTS AC — 600 VOLTS AC																	
	30	H361	\$ 49.	H361RB	\$ 83.	H361D or DS	\$ 219.	H361A	H361AWK	\$ 80.	5	15	7 1/2	20		30	
	60	H362	59.	H362RB	98.	H362D or DS	243.	H362A	H362AWK	82.	5	15	7 1/2	20		60	
	100	H363	109.	H363RB	153.	H363D or DS	484.	H363A	H363AWK	128.	25	60	30	50		100	
	200	H364	159.	H364RB	210.	H364D or DS	676.	H364A	H364AWK	205.	50	60	50	50		200	
	400	H365	413.	H365R	492.	H365DS	1287.	H365A	H365AWK	453.	100	100	100	100		400	
	600	H366	694.	H366R	988.	H366WP	1843.	H366A	H366AWK	764.						600	
	800	H367	1199.	H367R	1560.											800	
	1200	H368	1577.	H368R	1990.											1200	
4 WIRE S/N (3 BLADES 3 FUSES) 277/480 VOLTS AC																	
	30	H361N	\$ 57.			H361ND or DS	\$ 227.	H361NA	H361NAWK	\$ 86.	5	15				30	
	60	H362N	66.			H362ND or DS	250.	H362NA	H362NAWK	90.	15	30				60	
	100	H363N	118.			H363ND or DS	499.	H363NA	H363NAWK	141.	25	60	30	30		100	
	200	H364N	173.	H364NR	523.	H364ND or DS	694.	H364NA	H364NAWK	219.	50	60	50	50		200	
	400	H365N	444.			H365NDS	1318.				100	100	100	100		400	
	600	H366N	727.													600	
	800	H367N	1264.	H367NR	1550.											800	
	1200	H368N	1632.	H368NR	1990.											1200	
4 POLE, 480 VOLTS AC — 600 VOLTS AC																	
	30	H461-2	\$ 80.					H461-2A	H461-2AWK	\$ 98.	7 1/2	20	10	25		30	
	60	H462	93.					H462A	H462AWK	109.	15	40	20	40		60	
	100	H463	156.					H463A	H463AWK	168.	25	50	30	50		100	
	200	H464	261.					H464A	H464AWK	282.	50	60	50	50		200	
	400	H465	538.					H465A	H465AWK	589.						400	
	600	H466	872.					H466A	H466AWK	933.						600	

*Use Class L fuse. Not UL listed for DC

Dimensions Pages 34 and 35.

Not-fusible switches Page 33.

NOTES:

Class J Fuse Provisions:

30-400 Ampere — Standard on all 600 V. AC switches. For field conversion fuse base is moved to uppermost base mounting holes.
600 Ampere — Add suffix J to 600 V. catalog number. Add \$34. for 2 pole switch and \$51. for 3 pole switch.

Rejection Type Fuse Clips:

For all other high interrupting type fuse provisions add 10% to switch price.

Electrical Interlock Kits:

Are available for most Heavy Duty switches. See pages 32, 34 and 35 for details.

Neutrals:

insulated, groundable.

Finish:

Gray baked enamel over rust inhibiting primer

Switching Neutral:

3 wire price is the same as the standard 3 pole switch. Add \$WN to 3 pole catalog number

*60 ampere switch with 30 ampere fuse spacing and clips

*600 V. AC — 250 V. DC only.

▲600 V. AC only.

⚡ Swing-out Base — No interlock.

⚡ 600 amp. switches do not have single stroke cover.

⚡ For application above 600 amperes, refer to BOLT-LOC® switches on page 38.

H600SN — \$31.00 list. Neutral kit for all 400 Amp switches

Availability of 800 & 1200 Amp raintight switches to be announced.

CONDUIT PROVISIONS

Enclosure	Rating	Top		Bottom	
		D	DS	D	DS
NEMA 4 & 5	30 A.	(1) — 1 — 1 1/4	(1) — 3/4	(1) — 1 — 1 1/4	(1) — 3/4
	60 A.	(1) — 1 1/4 — 1 1/2	(1) — 1 1/4	(1) — 1 1/4 — 1 1/2	(1) — 1 1/4
	100 A.	(1) — 1 1/2 — 2	(1) — 2	(1) — 1 1/2 — 2	(1) — 2
	200 A.	(1) — 2 1/2 — 3	(1) — 2 1/2	(1) — 2 1/2 — 3	(1) — 2 1/2

All 600 amp. WP switches are constructed of Boiler Plate Sheet Steel and their hub sizes must be specified on the order.

BOLT-ON HUBS

Conduit Size	3/4	1	1 1/4	1 1/2	2	2 1/2	Closing Cap
Hub Cat. No.	B075	B100	B125	B150	B200	B250	BCAP
Price Each	\$3.20	\$3.20	\$3.20	\$3.20	\$5.50	\$9.60	\$.30

Type RB raintight enclosures have a bolt-on closing cap factory installed. Order bolt-on hubs separately from table above. For more details see page 15.

ACCESSORIES & MISCELLANEOUS

PARTS KITS

Description	Cat. No.	Price	Description	Cat. No.	Price
Card and Holder to Identify Circuits (Std. Pkg. 10)	PK1CH	\$.90	16 oz. Aerosol Paint Can, containing Sq. D Gray Paint	PK-49SP	\$3.80
Cover Release Handle for NEMA 12 Switches & Brkrs.	C1H-100	1.80	Cover Padlock Attachment for NEMA 12 Switches	CPA-100	1.80



HEAVY DUTY SAFETY SWITCHES — VISIBLE BLADES SAFETY HANDLE

240
VOLT

SINGLE THROW — NOT FUSIBLE

System	Amps.	NEMA 1 Indoor		NEMA 3R Rainlight Type RB		NEMA 4 and 5 Dust-tight, Water-tight D-Cast Enclosure DS-Stainless Steel		NEMA 12 JIC-Mill & Foundry Type Single Stroke Cover Sealing			MAXIMUM HORSEPOWER RATINGS			
		Catalog Number	Price	Catalog Number	Price	Catalog Number	Price	Catalog Number	Catalog Number	Price	240V AC		250V DC	
											1Ø	3Ø	1Ø	3Ø
2 POLE, 240 VOLTS AC — 250 VOLTS DC														
1 1	30	HU221	\$ 25.	Use 3 Pole		Use 600 Volt		HU221A		HU221AWK		\$ 39.	3	5
	60	HU222	46.	600 V. Switch for		Switch for		HU222A		HU222AWK		51.	10	10
	100	HU223	73.	240 V. Application		240 V. Application		HU223A		HU223AWK		82.	15	20
	200	HU224	112.					HU224A		HU224AWK		117.	15	40
	400	HU225	250.					HU225A		HU225AWK		287.	50	60
	600	HU226	443.					+ HU226A		+ HU226AWK		450.		
	800	●HU227	674.	●HU227R 1100.		240 V. Application								
1200	●HU228	921.	●HU228R 1500.											

600
VOLT

System	Amps.	NEMA 1		NEMA 3R		NEMA 4 and 5		NEMA 12			MAXIMUM HORSEPOWER RATINGS			
		Catalog Number	Price	Catalog Number	Price	Catalog Number	Price	With Knockouts Catalog Number	Without Knockouts Catalog Number	Price	480 V. AC		600V AC/240V DC/600V DC	
											1Ø	3Ø	1Ø	3Ø
2 POLE, 480 VOLTS AC — 600 VOLTS AC OR DC														
1 1	30	HU261	\$ 25.	Use 3 Pole	HU261D or DS	\$169.	HU261A	HU261AWK	\$ 48.	7 1/2	10	5	15	
	60	HU262	46.		HU262D or DS	204.	HU262A	HU262AWK	51.	20	25	10	25	
	100	★HU263	73.	Switch for	HU263D or DS	443.	HL263A	HU263AWK	82.	30	40	20		
	200	★HU264	112.		HU264D or DS	586.	★HL264A	★HU264AWK	117.	50	50	40		
	400	★HU265	250.	2 Pole Application	HU265DS	1102.	HL265A	HU265AWK	287.					
	600	△HU266	443.		HU266WP	1590.	△HU266A	△HU266AWK	450.					
	800	●HU267	674.											
1200	●HU268	921.	●HU267R	1160.										
				●HU268R	1610.									
3 POLE, 480 VOLTS AC — 600 VOLTS AC OR 250 VOLTS DC														
1 1 1	30	HU361	\$ 25.	HU361RB	\$ 46.	HU361D or DS	\$185.	HU361A	HU361AWK	\$ 56.	15	20	5	
	30	HU361-EI	57.	HU361RB-EI	78.	HU361DEI/DS-EI	217.	HU361A-EI	HU361AWK-EI	88.	15	20	5	
	60	HU362	46.	HU362RB	61.	HU362D or DS	219.	HU362A	HU362AWK	69.	30	40	10	
	60	HU362-EI	78.	HU362RB-EI	113.	HU362DEI/DS-EI	261.	HU362A-EI	HU362AWK-EI	101.	30	40	10	
	100	HU363	73.	HU363RB	114.	HU363D or DS	460.	HU363A	HU363AWK	100.	60	50	20	
	200	HU364	112.	HU364RB	137.	HU364D or DS	614.	HU364A	★HU364AWK	134.	60	50	40	
	400	△HU365	250.	HU365R	342.	HU365DS	1230.	HU365A	HU365AWK	346.	100	100		
	600	HU366	443.	HU366R	683.	HU366WP	1661.	△HU366A	△HU366AWK	556.	100	100		
	800	●HU367	899.	●HU367R	1175.									
	1200	●HU368	1209.	●HU368R	1610.									
4 POLE, 480 VOLTS AC — 600 VOLTS AC														
1 1 1 1	30	HU462	\$ 80.					HU462A	HU462AWK	\$ 88.	30			
	60	HU463	145.					HU463A	HU463AWK	155.				
	100	HU464	211.					HU464A	HU464AWK	247.				
	200	HU465	450.					HU465A	HU465AWK	496.				
	600	HU466	784.					△HU466A	△HU466AWK	862.				

★600 V. AC — 250 V. DC only.

△600 V. AC only.

●Use Class L Fuse. Not UL listed for DC.

See Page 31 for other footnotes.

See Pages 34 & 35 for dimensions.

FACTORY INSTALLED ELECTRICAL INTERLOCKS

Switches with EI suffix are stocked with pre-installed electrical interlocks shown below.

ELECTRICAL INTERLOCKS

Electrical interlocks for Heavy Duty Visible Blade Safety Switches are available in kit form for field or factory installation. Each kit contains instructions for proper field mounting. A pivot arm operates from switch mechanism, breaking the control BEFORE the main switchblades break.

Amp. Rating of Switch	Interlock Kit Cat. No.	Price Kit Only	Price Factory Installed
30	EI-300	\$19.	\$32.
30-60	EI-306-1 or 2▲	19.	32.
100-200	EI-1020-1 or 2▲	32.	45.
400	EI-4060	45.	58.
600	PK-4060-EI	45.	58.

See Page 34 or 35 for proper interlock for all heavy duty visible blade switches.

▲ 1 indicates one normally open and one normally closed contact.

2 indicates two normally open and two normally closed contacts.

NOTE—Factory installed price covers special handling required. Delivery on factory installed interlocks are subject to factory schedules and backlog.



EI-306-1 Electrical Interlock



MISCELLANEOUS SWITCHES

SIX POLE SINGLE THROW

Six-Pole — Single Throw Switches, one enclosure for NEMA 1, 3R or 12 application. A drip hood is provided. These switches are furnished without knockouts and hubs. Hubs are available as priced in the Green Sheets. The operating mechanism is quick-make, quick-break and fully interlocked. Not UL Listed.



Six Pole — Single Throw Switch

240 VOLT		600 VOLT				
Amps.	FUSIBLE		FUSIBLE		NOT FUSIBLE	
	Shoot Steel Enclosure — NEMA 1, 3R and 12					
	Catalog No.	Price	Catalog No.	Price	Catalog No.	Price
30	H86651ND	\$331.	H86641ND	\$331.	H81641ND	\$293.
60	H86652ND	396.	H86642ND	396.	H81642ND	340.
100	H86653ND	484.	H86643ND	484.	H81643ND	420.

INTERLOCKED RECEPTACLE

Interlocked Receptacle Switches are furnished for NEMA 1 or NEMA 12 applications. Switches are furnished with 60 ampere, 3 phase 4 wire grounded type special HUBBELLOCK receptacle, or Crouse-Hinds ARKTITE receptacle, prewired and mounted with interlock linkage to the switch mechanism. Interlock linkage prevents insertion or removal of the plug while switch is in the "ON" position. Linkage prevents operation of the switch if standard plug is inserted into switch with HUBBELLOCK or ARKTITE receptacle.



Interlocked Receptacle Switch with HUBBELLOCK Receptacle

▲ HUBBELLOCK RECEPTACLE

60A. 3 POLE			240 VOLT		60A. 3 POLE			600 VOLT	
FUSIBLE			FUSIBLE			NOT FUSIBLE			
Encl.	Catalog No.	Price	Encl.	Catalog No.	Price	Encl.	Catalog No.	Price	
NEMA 1	H322WH	\$200.	NEMA 1	H362WH	\$207.	NEMA 1	HU362WH	\$197.	
NEMA 12	H322AWH	206.	NEMA 12	H362AWH	218.	NEMA 12	HU362AWH	204.	

HUBBELLOCK CAP

Cat. No.	Description	Price
SD-12781	Cap for receptacle switch furnished with Kellems grip for 1 1/8" to 1 3/4" cable diameter as standard	\$ 45.

ARKTITE* RECEPTACLE

60A. 3 POLE			240 VOLT			60A. 3 POLE			480 VOLT			60A. 3 POLE			600 VOLT		
FUSIBLE						FUSIBLE						FUSIBLE					
Encl.		Catalog No.		Price		Encl.		Catalog No.		Price		Encl.		Catalog No.		Price	
NEMA 1		H322WC		\$200.		NEMA 1		H342WC		\$207.		NEMA 1		H362WC		\$207.	
NEMA 12		H322AWC		206.		NEMA 12		H342AWC		218.		NEMA 12		H362AWC		218.	
NOT FUSIBLE						NOT FUSIBLE						NOT FUSIBLE					
Encl.		Catalog No.		Price		Encl.		Catalog No.		Price		Encl.		Catalog No.		Price	
NEMA 1		HU322WC		\$197.		NEMA 1		HU342WC		\$197.		NEMA 1		HU362WC		\$197.	
NEMA 12		HU322AWC		204.		NEMA 12		HU342AWC		204.		NEMA 12		HU362AWC		204.	

Accepts Type APJ 4-Pole Crouse-Hinds plug (3 wire plug ground)

Interlocked Receptacle Switch with Crouse-Hinds ARKTITE Receptacle



* ARKTITE is a Registered Trademark of Crouse-Hinds Co.

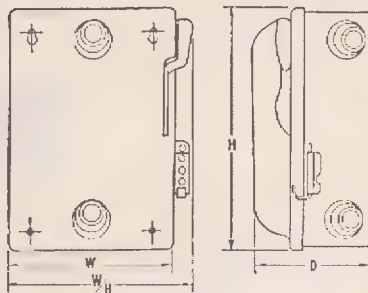
▲ HUBBELLOCK is a Registered Trademark of Harvey Hubbell, Inc.

SCHEDULE A DISCOUNT

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HEAVY DUTY SAFETY SWITCHES

GENERAL PURPOSE — RAIN-TIGHT



TERMINAL LUG SIZES

Amp.	Volt	Min.	Max.	Type
30	240	14	6	CU
30-60	480	14	2	CU
		10	1	AL
60	240	10	0	CU
100	240	10	0	CU
100	480	10	0	AL
		6	0	CU
200	ALL	6	300 MCM	AL or CU
400	ALL	(1)-000	750 MCM	AL or CU
		(1)-6	300 MCM	AL or CU
600	ALL	(2)-00	500 MCM	AL or CU
800	ALL	(3)-4	600 MCM	AL or CU
1200	ALL	(4)-4	600 MCM	AL or CU

ELECTRICAL INTERLOCKS AND APPROXIMATE DIMENSIONS AND SHIPPING WEIGHTS

Catalog Number	Weight (Lbs.)	Overall Dimensions, Inches				Electrical Inter-lock	Catalog Number	Weight (Lbs.)	Overall Dimensions, Inches				Electrical Inter-lock
		Height	Width	W/H	Depth				Height	Width	W/H	Depth	
45251	5	7 1/2	5 1/2	6 1/2	3 1/4	N.A.	H362N	22	15 1/2	11 1/2	13 1/2	6 1/2	B
45351	6	7 1/2	6 1/2	7 1/2	4 1/4	N.A.	H362RB	20	17 1/2	9 1/2	10 1/2	5 1/2	B
H221	9	9 1/2	5 1/2	7 1/2	5 1/2	A	H363	30	19 1/2	11 1/2	13 1/2	7 1/2	C
H221-2	13	13 1/2	8 1/2	10 1/2	6 1/2	B	H363N	39	19 1/2	14 1/2	16 1/2	7 1/2	C
H221NR	10	9 1/2	5 1/2	7 1/2	5 1/2	A	H363RB	35	21 1/2	12 1/2	13 1/2	7 1/2	C
H221NRB	10	11 1/2	6 1/2	7 1/2	5 1/2	F.I.	H364	47	24 1/2	13 1/2	14 1/2	7 1/2	C
H222	12	11 1/2	7 1/2	9 1/2	5 1/2	F.I.	H364N	62	24 1/2	16 1/2	18 1/2	7 1/2	C
H222NR	14	13 1/2	8 1/2	10 1/2	6 1/2	B	H364RB	57	26 1/2	14 1/2	15 1/2	8 1/2	C
H222NRB	14	13 1/2	8 1/2	10 1/2	6 1/2	B	H365	129	39 1/2	25 1/2	25 1/2	12	G
H223	15	9 1/2	10 1/2	10 1/2	6 1/2	B	H365N	132	39 1/2	25 1/2	25 1/2	12	G
H223NR	17	15 1/2	9 1/2	10 1/2	6 1/2	B	H365NR	129	39 1/2	25 1/2	25 1/2	12 1/2	G
H223NRB	25	17 1/2	11 1/2	13 1/2	7 1/2	C	H366	258	52 1/2	24 1/2	25 1/2	12 1/2	D
H224	26	17 1/2	11 1/2	13 1/2	7 1/2	C	H366N	258	52 1/2	24 1/2	25 1/2	16 1/2	D
H224NR	33	18 1/2	12 1/2	13 1/2	7 1/2	C	H367	283	52 1/2	24 1/2	25 1/2	17 1/2	D
H224NRB	29	18 1/2	12 1/2	13 1/2	7 1/2	C	H368	300	51 1/2	38 1/2	40 1/2	12 1/2	N.A.
H225	40	21 1/2	13 1/2	14 1/2	8 1/2	C	H368N	300	51 1/2	38 1/2	40 1/2	12 1/2	N.A.
H225NR	41	21 1/2	13 1/2	14 1/2	8 1/2	C	H421-2	22	15 1/2	11 1/2	13 1/2	6 1/2	B
H225NRB	46	23 1/2	14 1/2	15 1/2	8 1/2	C	H422	22	15 1/2	11 1/2	13 1/2	6 1/2	B
H226	47	23 1/2	14 1/2	15 1/2	8 1/2	C	H423	40	19 1/2	14 1/2	16 1/2	7 1/2	C
H226NR	112	36 1/2	25 1/2	25 1/2	12 1/2	G	H424	66	24 1/2	16 1/2	18 1/2	7 1/2	C
H226NRB	115	36 1/2	25 1/2	25 1/2	12 1/2	G	H425	185	39 1/2	29 1/2	29 1/2	12 1/2	G
H227	115	39 1/2	25 1/2	25 1/2	12 1/2	D	H426	289	52 1/2	24 1/2	25 1/2	16 1/2	D
H227NR	115	49 1/2	18 1/2	20	16 1/2	D	H461-2	22	15 1/2	11 1/2	13 1/2	6 1/2	B
H227NRB	115	49 1/2	18 1/2	20	16 1/2	D	H462	22	15 1/2	11 1/2	13 1/2	6 1/2	B
H228	280	48 1/2	32 1/2	35	12 1/2	N.A.	H463	41	19 1/2	14 1/2	16 1/2	7 1/2	C
H228NR	280	48 1/2	32 1/2	35	12 1/2	N.A.	H464	66	24 1/2	16 1/2	18 1/2	7 1/2	C
H228NRB	300	51 1/2	38 1/2	40 1/2	12 1/2	N.A.	H465	185	39 1/2	29 1/2	29 1/2	12 1/2	G
H229	11	2 1/2	7 1/2	9 1/2	5 1/2	B	H466	275	52 1/2	24 1/2	25 1/2	16 1/2	D
H229NR	15	2 1/2	7 1/2	9 1/2	5 1/2	B	HU221	9	9 1/2	5 1/2	7 1/2	5 1/2	A
H229NRB	27	9 1/2	11 1/2	13 1/2	7 1/2	C	HU222	13	13 1/2	8 1/2	10 1/2	6 1/2	B
H230	41	21 1/2	13 1/2	14 1/2	7 1/2	C	HU223	23	17 1/2	11 1/2	13 1/2	7 1/2	C
H230NR	117	39 1/2	25 1/2	25 1/2	12 1/2	G	HU224	36	21 1/2	13 1/2	14 1/2	7 1/2	C
H230NRB	117	39 1/2	25 1/2	25 1/2	12 1/2	G	HU225	106	36 1/2	25 1/2	25 1/2	12	G
H231	216	52 1/2	24 1/2	25 1/2	16 1/2	D	HU225R	106	39 1/2	25 1/2	25 1/2	12 1/2	G
H231NR	280	48 1/2	32 1/2	35	12 1/2	N.A.	HU226	158	38 1/2	18 1/2	20	16 1/2	D
H231NRB	300	51 1/2	38 1/2	40 1/2	12 1/2	N.A.	HU227	280	48 1/2	32 1/2	35	12 1/2	N.A.
H232	11	9 1/2	7 1/2	9 1/2	5 1/2	N.A.	HU228	300	51 1/2	38 1/2	40 1/2	12 1/2	N.A.
H232-2	15	13 1/2	8 1/2	10 1/2	6 1/2	B	HU261	9	9 1/2	7 1/2	9 1/2	5 1/2	A
H232NR	12	9 1/2	7 1/2	9 1/2	5 1/2	B	HU262	13	13 1/2	8 1/2	10 1/2	6 1/2	B
H232NRB	13	11 1/2	7 1/2	9 1/2	5 1/2	F.I.	HU263	24	17 1/2	11 1/2	13 1/2	7 1/2	C
H233	14	11 1/2	9 1/2	10 1/2	5 1/2	F.I.	HU264	37	21 1/2	13 1/2	14 1/2	7 1/2	C
H233NR	15	13 1/2	8 1/2	10 1/2	6 1/2	B	HU265	106	36 1/2	25 1/2	25 1/2	12	G
H233NRB	17	15 1/2	8 1/2	10 1/2	6 1/2	B	HU265R	106	39 1/2	25 1/2	25 1/2	12 1/2	G
H234	17	15 1/2	9 1/2	10 1/2	6 1/2	B	HU266	170	38 1/2	18 1/2	20	16 1/2	D
H234NR	20	17 1/2	9 1/2	10 1/2	6 1/2	B	HU267	280	48 1/2	32 1/2	35	12 1/2	N.A.
H234NRB	28	19 1/2	11 1/2	13 1/2	7 1/2	C	HU268	300	51 1/2	38 1/2	40 1/2	12 1/2	N.A.
H235	30	19 1/2	11 1/2	13 1/2	7 1/2	C	HU361	10	9 1/2	7 1/2	9 1/2	5 1/2	A
H235NR	33	18 1/2	12 1/2	13 1/2	7 1/2	C	HU361-E1	10	9 1/2	7 1/2	9 1/2	5 1/2	A
H235NRB	35	21 1/2	12 1/2	13 1/2	7 1/2	C	HU361RB	12	11 1/2	7 1/2	9 1/2	5 1/2	F.I.
H236	46	21 1/2	13 1/2	14 1/2	7 1/2	C	HU361RB-E1	12	11 1/2	7 1/2	9 1/2	5 1/2	F.I.
H236NR	48	21 1/2	13 1/2	14 1/2	7 1/2	C	HU362	15	13 1/2	8 1/2	10 1/2	6 1/2	B
H236NRB	52	23 1/2	14 1/2	15 1/2	8 1/2	C	HU362-E1	15	13 1/2	8 1/2	10 1/2	6 1/2	B
H237	57	26 1/2	14 1/2	15 1/2	8 1/2	C	HU363	17	15 1/2	9 1/2	10 1/2	6 1/2	B
H237NR	124	36 1/2	25 1/2	25 1/2	12 1/2	G	HU363-E1	17	15 1/2	9 1/2	10 1/2	6 1/2	B
H237NRB	127	36 1/2	25 1/2	25 1/2	12 1/2	G	HU364	26	17 1/2	11 1/2	13 1/2	7 1/2	C
H238	124	39 1/2	25 1/2	25 1/2	12 1/2	G	HU364RB	39	18 1/2	12 1/2	13 1/2	7 1/2	C
H238NR	127	39 1/2	25 1/2	25 1/2	12 1/2	D	HU365	43	21 1/2	13 1/2	14 1/2	7 1/2	C
H238NRB	252	52 1/2	24 1/2	25 1/2	16 1/2	D	HU365RB	46	23 1/2	14 1/2	15 1/2	8 1/2	C
H239	260	52 1/2	24 1/2	25 1/2	16 1/2	D	HU366	115	36 1/2	25 1/2	25 1/2	12	G
H239NR	272	52 1/2	24 1/2	25 1/2	17 1/2	D	HU366RB	115	39 1/2	25 1/2	25 1/2	12 1/2	G
H239NRB	275	52 1/2	24 1/2	25 1/2	17 1/2	D	HU367	209	38 1/2	24 1/2	25 1/2	16 1/2	D
H240	280	48 1/2	32 1/2	35	12 1/2	N.A.	HU367RB	283	48 1/2	32 1/2	35	12 1/2	N.A.
H240NR	300	51 1/2	38 1/2	40 1/2	12 1/2	N.A.	HU368	303	51 1/2	38 1/2	40 1/2	12 1/2	N.A.
H240NRB	300	51 1/2	38 1/2	40 1/2	12 1/2	N.A.	HU368-E1	21	15 1/2	11 1/2	13 1/2	6 1/2	B
H241	11	12 1/2	7 1/2	9 1/2	5 1/2	B	HU463	37	19 1/2	14 1/2	16 1/2	7 1/2	C
H241NR	11	15 1/2	8 1/2	10 1/2	6 1/2	B	HU464	60	24 1/2	16 1/2	18 1/2	7 1/2	C
H241NRB	21	15 1/2	13 1/2	14 1/2	7 1/2	B	HU465	173	39 1/2	29 1/2	29 1/2	12 1/2	G
H242	14	14 1/2	7 1/2	9 1/2	5 1/2	B	HU466	240	38 1/2	24 1/2	25 1/2	16 1/2	D

ELECTRICAL INTERLOCKS:
N.A. — Not available
F.I. — Factory installed only.

A — EI-300
B — EI-306-t or 2

C — EI-1020-1 or 2
D — PK-4060E1

G — EI-4060

MANY OUTSTANDING FEATURES!



Dead front construction
Visible Blades



Positive-Pressure Fuse Clips



Spring-Loaded
Blade Hinges
Reduce Heating



Padlock Attachment locks
switch ON or OFF



HEAVY DUTY SAFETY SWITCHES

SPECIAL PURPOSE INDUSTRIAL ENCLOSURES



Heavy Duty
Fusible Interior



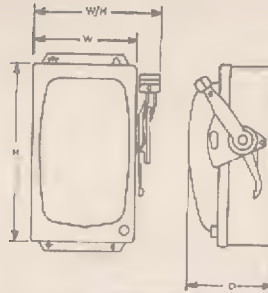
Lockoff Assembly



Heavy Duty
Cross Bar Assembly



Heavy Duty-Visible Blade
Cast Aluminum



TERMINAL LUG SIZES

Amp. Rating	Min. Wire	Max. Wire	Wire Type
30	14	4	CU
60	14	4	CU
100	14	0	CU
200	6	250 MCM	CU or AL
400	(1)-000	750 MCM	CU or AL
600	(1)-6	300 MCM	CU or AL
	(2)-00	500 MCM	CU or AL

ELECTRICAL INTERLOCKS AND APPROXIMATE DIMENSIONS AND SHIPPING WEIGHTS

Switches with "AWK" suffix have same dimensions and electrical interlocks as switches with "A" suffix shown below.

Catalog Number	Weight (Lbs.)	Overall Dimensions, Inches				Electrical Inter-lock	Catalog Number	Weight (Lbs.)	Overall Dimensions, Inches				Electrical Inter-lock
		Height	Width	W/H	Depth				Height	Width	W/H	Depth	
H221A	13	12 1/2	7 1/2	8 3/4	5 1/16	B	H362NDS	23	15 1/2	11 1/2	13 1/2	6 1/2	B
H221DS	13	12 1/2	7 1/2	8 3/4	5 1/16	B	H363A	35	19 1/2	11 1/2	13 1/2	7 1/2	B
H221NA	13	12 1/2	7 1/2	8 3/4	5 1/16	B	H363DS	35	19 1/2	11 1/2	13 1/2	7 1/2	B
H221NDS	13	12 1/2	7 1/2	8 3/4	5 1/16	B	H363NA	40	19 1/2	11 1/2	13 1/2	7 1/2	B
H221-2A	17	15 1/2	8 1/2	10 1/4	6 1/2	B	H363NDS	40	19 1/2	11 1/2	13 1/2	7 1/2	B
H222A	18	15 1/2	8 1/2	10 1/4	6 1/2	B	H364A	52	24 1/2	13 1/2	14 1/2	8 1/2	B
H222DS	18	15 1/2	8 1/2	10 1/4	6 1/2	B	H364DS	52	24 1/2	13 1/2	14 1/2	8 1/2	B
H222NA	15	15 1/2	8 1/2	10 1/4	6 1/2	B	H364NA	60	24 1/2	13 1/2	14 1/2	8 1/2	B
H222NDS	15	15 1/2	8 1/2	10 1/4	6 1/2	B	H364NDS	60	24 1/2	13 1/2	14 1/2	8 1/2	B
H223A	32	19 1/2	11 1/2	13 1/2	7 1/2	C	H365A	129	39 1/2	25 1/2	25 1/2	12 1/2	C
H223DS	32	19 1/2	11 1/2	13 1/2	7 1/2	C	H365DS	129	39 1/2	25 1/2	25 1/2	12 1/2	C
H223NA	33	19 1/2	11 1/2	13 1/2	7 1/2	C	H365NA	132	39 1/2	25 1/2	25 1/2	12 1/2	C
H223NDS	33	19 1/2	11 1/2	13 1/2	7 1/2	C	H365NDS	132	39 1/2	25 1/2	25 1/2	12 1/2	C
H224A	47	24 1/2	13 1/2	14 1/2	8 1/2	C	H366A	270	55 1/2	24 1/2	26 1/2	16 1/2	D
H224DS	47	24 1/2	13 1/2	14 1/2	8 1/2	C	H366WP	378	55 1/2	24 1/2	26 1/2	16 1/2	D
H224NA	45	24 1/2	13 1/2	14 1/2	8 1/2	C	H421-2A	24	15 1/2	11 1/2	13 1/2	6 1/2	B
H224NDS	45	24 1/2	13 1/2	14 1/2	8 1/2	C	H422A	25	15 1/2	11 1/2	13 1/2	6 1/2	B
H225A	112	39 1/2	25 1/2	25 1/2	12 1/2	G	H423A	41	19 1/2	14 1/2	15 1/2	7 1/2	B
H225DS	112	39 1/2	25 1/2	25 1/2	12 1/2	G	H424A	68	24 1/2	17 1/2	18 1/2	8 1/2	B
H225NA	115	39 1/2	25 1/2	25 1/2	12 1/2	G	H425A	185	39 1/2	29 1/2	29 1/2	12 1/2	C
H225NDS	115	39 1/2	25 1/2	25 1/2	12 1/2	G	H426A	280	55 1/2	24 1/2	26 1/2	16 1/2	D
H226A	250	55 1/2	24 1/2	26 1/2	16 1/2	D	H461-2A	25	15 1/2	11 1/2	13 1/2	6 1/2	B
H226NA	250	55 1/2	24 1/2	26 1/2	16 1/2	D	H462A	25	15 1/2	11 1/2	13 1/2	6 1/2	B
H226WP	340	55 1/2	28 1/2	29 1/2	18 1/2	D	H463A	46	19 1/2	14 1/2	15 1/2	7 1/2	B
H226NWP	375	55 1/2	28 1/2	29 1/2	18 1/2	D	H464A	64	24 1/2	17 1/2	18 1/2	8 1/2	B
H261A	13	12 1/2	7 1/2	8 3/4	5 1/16	B	H465A	185	39 1/2	29 1/2	29 1/2	12 1/2	C
H261DS	13	12 1/2	7 1/2	8 3/4	5 1/16	B	H466A	280	55 1/2	24 1/2	26 1/2	16 1/2	D
H262A	18	15 1/2	8 1/2	10 1/4	6 1/2	B	HU221A	12	12 1/2	7 1/2	8 3/4	5 1/16	B
H262DS	18	15 1/2	8 1/2	10 1/4	6 1/2	B	HU222A	17	15 1/2	8 1/2	10 1/4	6 1/2	B
H263A	32	19 1/2	11 1/2	13 1/2	7 1/2	C	HU223A	29	19 1/2	11 1/2	13 1/2	7 1/2	C
H263DS	32	19 1/2	11 1/2	13 1/2	7 1/2	C	HU224A	43	24 1/2	13 1/2	14 1/2	8 1/2	B
H264A	48	24 1/2	13 1/2	14 1/2	8 1/2	C	HU225A	106	39 1/2	25 1/2	25 1/2	12 1/2	C
H264DS	48	24 1/2	13 1/2	14 1/2	8 1/2	C	HU226A	200	41 1/2	24 1/2	26 1/2	16 1/2	D
H265A	117	39 1/2	25 1/2	25 1/2	12 1/2	G	HU261A	12	12 1/2	7 1/2	8 3/4	5 1/16	B
H265DS	117	39 1/2	25 1/2	25 1/2	12 1/2	G	HU261DS	12	12 1/2	7 1/2	8 3/4	5 1/16	B
H266A	248	55 1/2	24 1/2	26 1/2	16 1/2	D	HU262A	17	15 1/2	8 1/2	10 1/4	6 1/2	B
H266WP	350	55 1/2	28 1/2	29 1/2	18 1/2	D	HU262DS	17	15 1/2	8 1/2	10 1/4	6 1/2	B
H321A	14	12 1/2	7 1/2	8 3/4	5 1/16	B	HU263A	29	19 1/2	11 1/2	13 1/2	7 1/2	C
H321DS	14	12 1/2	7 1/2	8 3/4	5 1/16	B	HU263DS	29	19 1/2	11 1/2	13 1/2	7 1/2	C
H321NA	14	12 1/2	7 1/2	8 3/4	5 1/16	B	HU264A	43	24 1/2	13 1/2	14 1/2	8 1/2	B
H321NDS	14	12 1/2	7 1/2	8 3/4	5 1/16	B	HU264DS	43	24 1/2	13 1/2	14 1/2	8 1/2	B
H321-2A	19	15 1/2	8 1/2	10 1/4	6 1/2	B	HU265A	106	39 1/2	25 1/2	25 1/2	12 1/2	C
H322A	19	15 1/2	8 1/2	10 1/4	6 1/2	B	HU265DS	106	39 1/2	25 1/2	25 1/2	12 1/2	C
H322DS	19	15 1/2	8 1/2	10 1/4	6 1/2	B	HU266A	200	41 1/2	24 1/2	26 1/2	16 1/2	D
H322NA	20	15 1/2	8 1/2	10 1/4	6 1/2	B	HU266WP	300	55 1/2	25 1/2	29 1/2	16 1/2	D
H322NDS	20	15 1/2	8 1/2	10 1/4	6 1/2	B	HU361A	14	12 1/2	7 1/2	8 3/4	5 1/16	B
H323A	35	19 1/2	11 1/2	13 1/2	7 1/2	C	HU361A-EI	15	12 1/2	7 1/2	8 3/4	5 1/16	B
H323DS	35	19 1/2	11 1/2	13 1/2	7 1/2	C	HU361AWK-EI	15	12 1/2	7 1/2	8 3/4	5 1/16	B
H323NA	36	19 1/2	11 1/2	13 1/2	7 1/2	C	HU361D-EI	20	16 1/2	9 1/2	11 1/2	6 1/2	B
H323NDS	36	19 1/2	11 1/2	13 1/2	7 1/2	C	HU361DS	15	12 1/2	7 1/2	8 3/4	5 1/16	B
H324A	52	24 1/2	13 1/2	14 1/2	8 1/2	C	HU361DS-EI	16	12 1/2	7 1/2	8 3/4	5 1/16	B
H324DS	52	24 1/2	13 1/2	14 1/2	8 1/2	C	HU362A	19	15 1/2	8 1/2	10 1/4	6 1/2	B
H324NA	54	24 1/2	13 1/2	14 1/2	8 1/2	C	HU362A-EI	20	15 1/2	8 1/2	10 1/4	6 1/2	B
H324NDS	54	24 1/2	13 1/2	14 1/2	8 1/2	C	HU362AWK-EI	20	15 1/2	8 1/2	10 1/4	6 1/2	B
H325A	124	39 1/2	25 1/2	25 1/2	12 1/2	G	HU362D-EI	26	19 1/2	10 1/2	12 1/2	7 1/2	B
H325DS	124	39 1/2	25 1/2	25 1/2	12 1/2	G	HU362DS	19	15 1/2	8 1/2	10 1/4	6 1/2	B
H325NA	127	39 1/2	25 1/2	25 1/2	12 1/2	G	HU362DS-EI	20	15 1/2	8 1/2	10 1/4	6 1/2	B
H325NDS	127	39 1/2	25 1/2	25 1/2	12 1/2	G	HU363A	31	19 1/2	11 1/2	13 1/2	7 1/2	C
H326A	272	55 1/2	24 1/2	26 1/2	16 1/2	D	HU363DS	31	19 1/2	11 1/2	13 1/2	7 1/2	C
H326NA	284	55 1/2	24 1/2	26 1/2	16 1/2	D	HU364A	48	24 1/2	13 1/2	14 1/2	8 1/2	B
H326WP	380	55 1/2	28 1/2	29 1/2	18 1/2	D	HU364DS	48	24 1/2	13 1/2	14 1/2	8 1/2	B
H326NWP	385	55 1/2	28 1/2	29 1/2	18 1/2	D	HU365A	115	39 1/2	25 1/2	25 1/2	12 1/2	C
H361A	14	12 1/2	7 1/2	8 3/4	5 1/16	B	HU365DS	115	39 1/2	25 1/2	25 1/2	12 1/2	C
H361DS	14	12 1/2	7 1/2	8 3/4	5 1/16	B	HU366A	210	41 1/2	24 1/2	26 1/2	16 1/2	D
H361NA	23	15 1/2	11 1/2	13 1/2	6 1/2	B	HU366WP	400	55 1/2	25 1/2	29 1/2	16 1/2	D
H361NDS	23	15 1/2	11 1/2	13 1/2	6 1/2	B	HU462A	22	15 1/2	11 1/2	13 1/2	6 1/2	B
H361-2A	20	15 1/2	8 1/2	10 1/4	6 1/2	B	HU463A	40	19 1/2	14 1/2	15 1/2	7 1/2	C
H362A	20	15 1/2	8 1/2	10 1/4	6 1/2	B	HU464A	57	24 1/2	17 1/2	18 1/2	8 1/2	C
H362DS	20	15 1/2	8 1/2	10 1/4	6 1/2	B	HU465A	173	39 1/2	29 1/2	29 1/2	12 1/2	G
H362NA	23	15 1/2	11 1/2	13 1/2	6 1/2	B	HU466A	280	41 1/2	24 1/2	26 1/2	16 1/2	D

HEAVY DUTY VISIBLE BLADE CAST ALUMINUM SAFETY SWITCHES

NEMA 4 & 5 — All catalog numbers

Type	Weight	Height	Width	W/H	Depth	E.I.	Type	Weight	Height	Width	W/H	Depth	E.I.
30 Amp	21	13 1/2	9 1/2	11 1/4	6 1/4	B	100 Amp	45	19 1/2	13 1/2	15 1/4	11 1/4	C
60 Amp	28	16 1/2	10 1/2	12 1/4	7 1/4	B	200 Amp	58	25	16 1/2	18 1/2	14 1/4	C


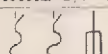



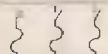
See Page 34 for electrical interlock symbol identification.




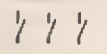

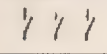
HEAVY DUTY SAFETY SWITCHES—COMPACT TYPE

Compact type Industrial Safety Switches have general purpose enclosures (NEMA Type 1) with knockouts — or (NEMA 4, 5, 9) with cast enclosure. Double break contacts in special arc chambers give high interrupting capacity. Special features include cover interlocks, cadmium plated current carrying parts and compact design, with front operated handle as integral part of box, which permits close ganging. These switches meet Federal Specification W-5-865c for Heavy Duty Switches and are U/L listed: File E2875. They also meet NEMA KS 1-1969 for Type Heavy Duty except with general purpose enclosure.

FUSIBLE

System	Amps.	NEMA 1 Compact	HORSEPOWER RATINGS												DC	
			240 or 480 Volts AC				600 Volts AC									
			Standard		Maximum		Standard		Maximum							
			1ϕ	3ϕ	1ϕ	3ϕ	1ϕ	3ϕ	1ϕ	3ϕ	Std.	Max.				
2 POLE, 240 VOLTS AC — 250 VOLTS DC																
	30 60	56251 56252	\$ 42. 68.	55251 55252	\$163. 184.	1½ 3	...	3 10	...	...	...	...	5 10	5 10
3 WIRE S/N (2 BLADES, 2 FUSES — 240 VOLTS AC																
	30 60	59311 59312	\$ 46. 61.	50311 50312	\$169. 184.	1½ 3	3 7½	3 10	7½ 15	...	...	...	...	...
3 POLE, 240 VOLTS AC																
	30 60	56351 56352	\$ 51. 73.	55351 55352	\$170. 188.	...	3 7½	...	7½ 15	...	...	...	...	...
4 WIRE S/N (3 BLADES, 3 FUSES) — 240 VOLTS AC																
	30 60	...	...	50411 50412	\$186. 206.	...	3 7½	...	7½ 15	...	...	...	...	...
2 POLE, 480 VOLTS AC — 600 VOLTS AC OR DC																
	30 60	56261 56262	\$ 89. 73.	55261 55262	\$187. 204.	3 5	...	7½ 20	...	3 10	...	10 25	10 25	15 25		
3 POLE, 480 VOLTS AC — 600 VOLTS AC																
	30 60	56341 56342	\$ 80. 83.	55341 55342	\$208. 223.	...	5 15	...	15 30	...	7½ 15	...	20 40	...		

NOT FUSIBLE

2 POLE, 240 VOLTS AC — 250 VOLTS DC															
	30 60	51251 51252	\$ 38. 61.	53261D 53262D	\$154. 187.	5 10	...	...	...	...	...	...	...	5 10	
3 POLE, 240 VOLTS AC															
	30 60	51351 51342	\$ 46. 69.	53341D 53342D	\$170. 182.	...	...	...	7½ 15	...	...	...	...
2 POLE, 480 VOLTS AC — 600 VOLTS AC OR DC															
	30 60	51261 51262	\$ 46. 60.	53261D 53262D	\$154. 187.	5 10	...	7½ 20	...	10 25	...	...	...	5 10	
3 POLE, 480 VOLTS AC — 600 VOLTS AC															
	30 60	51341 51342	\$ 53. 69.	53341D 53342D	\$170. 182.	...	7½ 15	...	15 30	...	20 40	...	20 40		

APPROXIMATE DIMENSIONS AND SHIPPING WEIGHTS

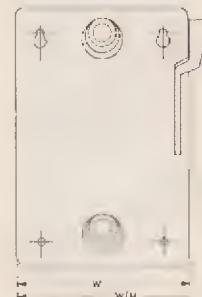
Cat. No.	Wt. (Lbs.)	Overall Dimensions, Inches				Cat. No.	Wt. (Lbs.)	Overall Dimensions, Inches			
		Height	Width	W/H	D			Height	Width	W/H	D
50311	23	14½	10½	11¾	5¾	55261	23	14½	10½	11¾	5¾
50312	24	14½	10½	11¾	5¾	55262	24	14½	10½	11¾	5¾
50411	23	14½	10½	11¾	5¾	55341	23	14½	10½	11¾	5¾
50412	24	14½	10½	11¾	5¾	55342	24	14½	10½	11¾	5¾
51251	9	8½	6¾	7½	4¾	55351	9	8½	6¾	7½	4¾
51252	14	11½	7¾	8½	5½	55352	14	11½	7¾	8½	5½
51261	9	8½	6¾	7½	4¾	56251	9	8½	6¾	7½	4¾
51262	14	11½	7¾	8½	5½	56252	14	11½	7¾	8½	5½
51341	9	8½	6¾	7½	4¾	56261	9	11½	7¾	8½	5½
51342	14	11½	7¾	8½	5½	56262	14	13½	7¾	8½	5½
51351	9	8½	6¾	7½	4¾	56341	9	11½	7¾	8½	5½
53261D	23	14½	10½	11¾	5¾	56342	14	13½	7¾	8½	5½
53262D	24	14½	10½	11¾	5¾	56351	9	8½	6¾	7½	4¾
53341D	23	14½	10½	11¾	5¾	56352	14	11½	7¾	8½	5½
53342D	24	14½	10½	11¾	5¾	59311	9	8½	6¾	7½	4¾
55251	23	14½	10½	11¾	5¾	59312	14	11½	7¾	8½	5½
55252	24	14½	10½	11¾	5¾						

TERMINAL LUG SIZES		
Amps Rating	Minimum Wire	Maximum Wire
30	14	4
60	14	4

Lugs are U/L listed for copper conductors only



50,000 Line Compact Type NEMA 1 Enclosure



DOUBLE THROW SAFETY SWITCHES

DOUBLE THROW SAFETY SWITCHES are designed to transfer loads from one supply source to another. Horsepower ratings are not necessary, since use as motor circuit switches is not expected. These switches are UL listed: File E2875, except as noted. 82,000 line NEMA 1 devices meets WS865-C for Type NDD switches.

TERMINAL LUG SIZES

Ampere Rating	Minimum Wire	Maximum Wire
30	14	4
60	14	4
△100	6	00
△200	6	300 MCM
400	4	2-350 MCM
600	000	2-500 MCM

Lugs are UL listed for Cu conductors only, except as noted.

△UL listed for Al or Cu conductors.



92,000 Line Fusible Interior



82,000 Line NEMA 3R Rain-tight



82,000 Line Interior

240
VOLT

600
VOLT

Amps	FUSIBLE TOP & BOTTOM		NOT FUSIBLE	
	Sheet: Steel Enclosure — NEMA 1			
	Cat. No.	Price	Cat. No.	Price
2-POLE, 240 VOLTS AC — 250 VOLTS DC				
30	92251F	\$ 80.	92251	\$ 49.
30-60	82252F	143.	82252	78.
60	82253F	214.	82253	113.
100	82254F	298.	82254	152.
200	*92255F	603.	*92255	424.
400	*92256F	751.	*92256	602.

3-POLE, 240 VOLTS AC				
30	92351F	\$ 84.	92351	\$ 57.
30-60	82352F	155.	82352	84.
60	82353F	260.	82353	137.
100	82354F	392.	82354	215.
200	92355F	826.	92355	589.
400	92356F	1000.	92356	789.

4-POLE, 240 VOLTS AC				
30	† 92451F	\$120.	92451	\$ 83.
30-60	† 92452F	189.	92452	120.
60	† 92453F	305.	92453	244.
100	† 92454F	496.	92454	339.
200	92455F	921.	92455	762.
400	92456F	1180.	92456	892.

* 600 Volts AC — 250 Volts DC only.

Amps	FUSIBLE TOP & BOTTOM		NOT FUSIBLE		NOT FUSIBLE	
	Sheet: Steel Enclosure — NEMA 1				NEMA 3R	
	Cat. No.	Price	Cat. No.	Price	Cat. No.	Price
2-POLE, 600 VOLTS AC — 600 VOLTS DC						
† 82261F	\$158.	82262	\$ 80.	82262RB	\$134.	
82262F	166.	82263	123.	82263RB	206.	
★ 82263F	285.	★ 82264	169.	82264RB	415.	
★ 82264F	346.	† ★ 92245	476.			
† ★ 92245F	647.	† ★ 92246	669.			

3-POLE, 600 VOLTS AC						
† 82341F	\$169.	82342	\$ 95.	82342RB	\$159.	
82342F	172.	82343	152.	82343RB	257.	
82343F	305.	82344	232.	82344RB	477.	
82344F	457.	† 92345	600.			
† 92345F	848.	† 92346	863.			

4-POLE, 600 VOLTS AC						
† 92441F	\$253.	92442	\$131.			
† 92442F	260.	92443	280.			
† 92443F	450.	92444	373.			
† 92444F	581.	† 92445	832.			
† 92445F	996.	† 92446	1076.			

† Not UL listed.

* 240 Volts AC only

★ 600 Volts AC — 250 Volts DC only.

† Not UL listed.

* 240 Volts AC only.

APPROXIMATE DIMENSIONS AND SHIPPING WEIGHTS

Catalog Number	Wt. (Lbs.)	Overall Dimensions				Std. Pkg.	Catalog Number	Wt. (Lbs.)	Overall Dimensions				Std. Pkg.
		H	W	W/H	D				H	W	W/H	D	
82252	16	13 3/8	9 1/8	12 3/4	6 3/8	1	92246	184	52 1/16	18 7/8	22	16 3/8	1
82252F	22	23 3/8	9 3/8	11 1/16	6 5/8	1	92251	9	10 3/8	7 1/8	10 3/8	4 1/4	1
82253	24	16 1/16	11 1/16	14 1/16	8 1/16	1	92251 F	18	16 3/8	9 3/8	12 3/8	6 3/8	1
82253F	40	30 1/16	11 1/16	14 1/16	7 7/8	1	92255	75	31 1/8	16 3/8	20	12 3/8	1
82254	49	22 3/8	15 3/8	19 1/8	9 1/16	1	92255F	180	46 3/8	25 3/8	29	12 3/8	1
82254F	74	38 1/16	15 3/8	19 3/8	9 7/8	1	92256	180	52 1/16	18 7/8	22	16 3/8	1
82261F	22	23 1/8	9 3/8	11 1/16	6 3/8	1	92256F	300	54 3/8	33	36 1/8	14 3/8	1
82262	16	13 3/8	9 1/8	12 3/4	6 3/8	1	92345	125	31 1/8	21 1/16	25 1/16	12 1/4	1
82262F	22	23 3/8	9 3/8	11 1/16	6 3/8	1	92345F	205	46 3/8	25 3/8	29	12 3/8	1
82262RB	29	14	12 3/8	16 3/8	7	1	92346	236	52 3/8	25 3/8	28 3/8	16 3/8	1
82263	26	16 1/16	11 1/16	14 1/16	8 1/16	1	92351	13	10 3/8	11 5/8	14 3/8	4 1/4	1
82263F	42	30 1/16	11 1/16	14 1/16	7 7/8	1	92351 F	24	16 3/8	14 1/2	17 3/8	6 1/2	1
82263RB	31	18 1/4	15 1/8	18 3/8	8 7/8	1	92355	110	31 1/8	21 1/16	24 1/16	12 3/4	1
82264	50	22 3/8	15 3/8	19 1/8	9 1/16	1	92355F	195	46 3/8	25 3/8	29	12 3/8	1
82264F	77	38 1/16	15 3/8	19 3/8	9 7/8	1	92356	226	52 3/8	25 3/8	28 3/8	16 3/8	1
82264RB	39	24 3/8	19 1/8	22 1/4	10	1	92356F	340	54 3/8	33	36 1/8	14 3/8	1
82341F	29	23 1/8	12 1/8	16 1/2	6 3/8	1	92441 F	42	12 3/8	17	20 1/4	7 1/2	1
82342	19	12 3/8	12 1/8	16 1/8	6 3/8	1	92442	28	12 3/8	17	20 1/4	7 1/2	1
82342F	30	23 3/8	12 1/8	16 1/2	6 3/8	1	92442 F	42	23	18 1/2	20 3/8	6 1/2	1
82342RB	29	14	12 3/8	16 1/8	7	1	92443	59	22 1/2	20 1/4	23 1/2	11 1/8	1
82343	33	16 1/16	15 3/8	18 1/2	8 5/8	1	92443 F	80	30 1/2	18 1/4	19 7/8	7 1/2	1
82343F	48	30 1/16	15 3/8	19	8 1/16	1	92444	86	31 1/8	22 3/8	26 1/8	11 3/8	1
82343RB	31	18 1/4	15 3/8	18 3/8	8 7/8	1	92445	180	38 3/8	24 3/8	28 1/4	14 1/8	1
82344	63	23 3/8	20	23 3/8	11 1/16	1	92445F	190	46 3/8	36 1/4	37 5/8	13	1
82344F	98	38 1/16	20	23 3/8	11 1/16	1	92446	316	52 3/8	31 1/8	34 1/8	16 1/2	1
82344RB	39	24 3/8	19 1/8	22 1/4	10	1	92451	19	12 3/8	13	14 3/8	6 1/2	1
82352	18	12 3/8	12 1/8	16 1/8	6 3/8	1	92451 F	34	16 3/8	17 3/8	21 3/8	6 1/2	1
82352F	29	23 3/8	12 1/8	16 1/2	6 3/8	1	92452	26	12 3/8	17	20 1/4	7 1/2	1
82353	31	16 1/16	15 3/8	18 1/2	8 5/8	1	92452 F	42	18	17 3/8	20 3/8	6 1/2	1
82353F	50	30 1/16	15 3/8	19	8 1/16	1	92453	60	22 1/2	20 1/4	23 1/2	11 1/8	1
82354	62	23 3/8	20	23 3/8	11 1/16	1	92453 F	81	30 1/2	18 1/4	19 7/8	7 1/2	1
82354F	93	38 1/16	20	23 3/8	11 1/16	1	92454	82	31 1/8	22 3/8	26 1/8	11 3/8	1
82444F	140	38 1/16	23 3/8	28 3/8	12 3/8	1	92455	165	36 3/8	24 3/8	28 1/4	14 1/8	1
82454F	140	38 1/16	23 3/8	28 3/8	12 3/8	1	92455F	295	46 3/8	36 1/4	37 5/8	13	1
92245	82	31 3/8	16 3/8	20	12 3/8	1	92456	290	52 3/8	31 1/8	34 1/8	16 1/2	1
92245F	180	46 3/8	25 3/8	29	12 3/8	1	92456F	466	55	42 3/8	45 3/8	14 1/2	1

ENCLOSED BOLT-LOC® SWITCHES

SINGLE-THROW, BOLTED-CONTACT

MANUAL FRONT OPERATED AC LOAD BREAK SWITCHES

BOLT-LOC switches have been tested to the latest specifications available covering temperature rise, endurance, dielectric, overload and short circuits including closing and opening on fault currents greater than the let-thru currents of NEMA Class L fuses. Features include quick-make, quick-break mechanism; bolted-contact in closed position; arc breaking and suppressing equipment; replaceable stationary arc tips; provisions and mounting hardware for Class L fuses; fuse access door interlock which restricts closing of switch with door open; all current carrying parts silver-plated; provisions for three padlocks in open position only.

ENCLOSURES — Nema 1, steel, medium gray finish. All devices listed are for cables in top and out bottom. 800 thru 2500 ampere switches are wall mounted. 3000 and 4000 ampere are free standing.

WITH TERMINAL LUGS

CLASS
9810

FRONT-OPERATED SWITCHES IN GENERAL PURPOSE (NEMA 1) ENCLOSURES

Volts	Ampere Rating	2-Pole—2-Wire		2-Pole—3-Wire*		3-Pole—3-Wire		3-Pole—4-Wire	
		Type	Price	Type	Price	Type	Price	Type	Price

FUSIBLE — (Prices do not include fuses)

240V. AC	800	BLG-22080	\$1358.	BLG-22080-N	\$1497.	BLG-32080	\$1520.	BLG-32080-N	\$1630.
	1200	BLG-22120	1456.	BLG-22120-N	1608.	BLG-32120	1635.	BLG-32120-N	1779.
	1600	BLG-22160	1622.	BLG-22160-N	1801.	BLG-32160	1821.	BLG-32160-N	2006.
	2000	BLG-22200	1684.	BLG-22200-N	1897.	BLG-32200	1929.	BLG-32200-N	2142.
	2500	BLG-22250	1901.	BLG-22250-N	2180.	BLG-32250	2221.	BLG-32250-N	2500.
	3000	BLG-22300	2634.	BLG-22300-N	2983.	BLG-32300	3052.	BLG-32300-N	3400.
	4000	BLG-22400	3176.	BLG-22400-N	3609.	BLG-32400	4109.	BLG-32400-N	4540.
480V. AC	800	BLG-24080	1368.			BLG-34080	1520.	BLG-34080-N	1630.
	1200	BLG-24120	1636.			BLG-34120	1815.	BLG-34120-N	1949.
	1600	BLG-24160	1786.			BLG-34160	2001.	BLG-34160-N	2120.
	2000	BLG-24200	1831.			BLG-34200	2109.	BLG-34200-N	2322.
	2500	BLG-24250	2025.			BLG-34250	2401.	BLG-34250-N	2680.
	3000	BLG-24300	2795.			BLG-34300	3228.	BLG-34300-N	3576.
	4000	BLG-24400	3305.			BLG-34400	4288.	BLG-34400-N	4721.

NOT-FUSIBLE

240V. AC	800	BLG-22080-U	\$1333.	BLG-22080-NU	\$1461.	BLG-32080-U	\$1465.	BLG-32080-NU	\$1576.
	1200	BLG-22120-U	1420.	BLG-22120-NU	1572.	BLG-32120-U	1581.	BLG-32120-NU	1715.
	1600	BLG-22160-U	1586.	BLG-22160-NU	1765.	BLG-32160-U	1767.	BLG-32160-NU	1946.
	2000	BLG-22200-U	1648.	BLG-22200-NU	1861.	BLG-32200-U	1875.	BLG-32200-NU	2088.
	2500	BLG-22250-U	1865.	BLG-22250-NU	2145.	BLG-32250-U	2167.	BLG-32250-NU	2446.
	3000	BLG-22300-U	2538.	BLG-22300-NU	2947.	BLG-32300-U	2998.	BLG-32300-NU	3347.
	4000	BLG-22400-U	3140.	BLG-22400-NU	3573.	BLG-32400-U	4054.	BLG-32400-NU	4486.
480V. AC	800	BLG-24080-U	1333.			BLG-34080-U	1465.	BLG-34080-NU	1576.
	1200	BLG-24120-U	1600.			BLG-34120-U	1761.	BLG-34120-NU	1896.
	1600	BLG-24160-U	1750.			BLG-34160-U	1947.	BLG-34160-NU	2126.
	2000	BLG-24200-U	1796.			BLG-34200-U	2055.	BLG-34200-NU	2268.
	2500	BLG-24250-U	2011.			BLG-34250-U	2347.	BLG-34250-NU	2626.
	3000	BLG-24300-U	2759.			BLG-34300-U	3174.	BLG-34300-NU	3522.
	4000	BLG-24400-U	3270.			BLG-34400-U	4235.	BLG-34400-NU	4666.

*NOTE Do not use for three-phase, two-wire, grounded-phase circuits.
For 600 volt AC applications, contact the factory thru your local Square D field office.

Switch Ampere Rating	Dimensions			No. of Lugs Per Phase & Neutral #2-600 MCM▲
	H	W	D	
800	54	30	12	3
1200	54	30	12	4
1600	60	36	14	5
2000	60	36	14	6
2500	60	36	14	Specify Quantity, Size and Type Cable
3000	90	42	18	
4000	90	42	18	

▲Suitable for copper or aluminum cable.

ORDERING INFORMATION REQUIRED

1. Class and type number.
2. Number of poles and wires.
3. Voltage and ampere rating.
4. Type of cable, lug sizes and quantity required.
5. If special features are required, order as "Class 9810, similar to Type except (clearly describe special features)"



ENCLOSED BOLT-LOC® SWITCHES

SINGLE-THROW, BOLTED-CONTACT

MOTOR OPERATED AC SWITCHES

CLASS
9810

GENERAL PURPOSE NEMA 1 ENCLOSURES

A BOLT-LOC motor operated switch consists of an electric operator and a manual front operated switch as shown on page 38. These switches can be furnished with "motor open and motor close" or "manual close and motor open". A manual operating handle is included which is automatically disengaged when switch is operated electrically.

STANDARD FEATURES include all those listed for manually operated switches except provisions for padlocking.

SPECIAL FEATURES available at additional cost include blown fuse detector; padlock attachment to prevent closing switch manually or with motor; motor exercise pushbutton and pilot light; provision for Kirk key interlock; auxiliary switch having 1 N.O. and 1-N.C. contact.

For motor operation add the following prices to manual front operated switches:

Amp.	Motor Open and Motor Close	Manual Close and Motor Open
800-1200	\$1410.	\$1250.
1600-2500	1510.	1350.
3000-4000	1680.	1520.

These prices include push buttons, pilot lights, control circuit transformer and larger enclosure (approximately 8 inches deeper). For omitting control circuit transformer deduct \$145.

MANUAL SIDE OPERATED LOAD BREAK SWITCHES

DUST-TIGHT ENCLOSURES — WITH TERMINAL LUGS

BOLT-LOC heavy-duty load-break mill switches in dust-tight steel enclosures have applications in steel mills, foundries, cement mills, textile plants and are extensively used for crane control. The standard switches are in steel wall-mounting enclosures for cables entering at top and exiting at bottom.

SIDE-OPERATED SWITCHES IN DUST-TIGHT INDUSTRIAL USE (NEMA 12) ENCLOSURES

Volts and Poles	Ampere Rating	Fusible		Not-Fusible	
		Type	Price	Type	Price
DC SIDE-OPERATED SWITCHES					
250V. DC 2 Pole 2 Wire	800	BLD-23080	\$1551.	BLD-23080-U	\$1497.
	1200	BLD-23120	1581.	BLD-23120-U	1527.
	1600	BLD-23160	1733.	BLD-23160-U	1679.
	2000	BLD-23200	1814.	BLD-23200-U	1760.
	2500	BLD-23250	2064.	BLD-23250-U	2010.
	3000	BLD-23300	2686.	BLD-23300-U	2588.
	4000	BLD-23400	3398.	BLD-23400-U	3345.
	AC SIDE-OPERATED SWITCHES				
240V. AC 3 Pole 3 Wire	800	BLD-32080	\$1635.	BLD-32080-U	\$1578.
	1200	BLD-32120	1756.	BLD-32120-U	1700.
	1600	BLD-32160	1951.	BLD-32160-U	1895.
	2000	BLD-32200	2064.	BLD-32200-U	2008.
	2500	BLD-32250	2366.	BLD-32250-U	2309.
	3000	BLD-32300	3240.	BLD-32300-U	3180.
	4000	BLD-32400	4359.	BLD-32400-U	4300.
	480V. AC 3 Pole 3 Wire	800	BLD-34080	1635.	BLD-34080-U	1578.
1200		BLD-34120	1948.	BLD-34120-U	1891.
1600		BLD-34160	2142.	BLD-34160-U	2086.
2000		BLD-34200	2255.	BLD-34200-U	2198.
2500		BLD-34250	2559.	BLD-34250-U	2500.
3000		BLD-34300	3427.	BLD-34300-U	3367.
4000		BLD-34400	4550.	BLD-34400-U	4493.

NOTE: See Page 38 for standard lug arrangements.
For 600 volt AC applications, contact the factory thru your local Square D field office.

Volt-Pole-Wire	Ampere Rating	Dimensions		
		H	W	D
240 V. AC	800	60	30	14
3 Pole-3 Wire	1200	60	30	14
Fusible and Not Fusible	1600	60	30	14
480 Volt AC	2000	60	30	14
3 Pole-3 Wire	2500			
Fusible and Not Fusible	3000			
250 Volt DC	4000			
2 Pole-2 Wire				
Fusible				

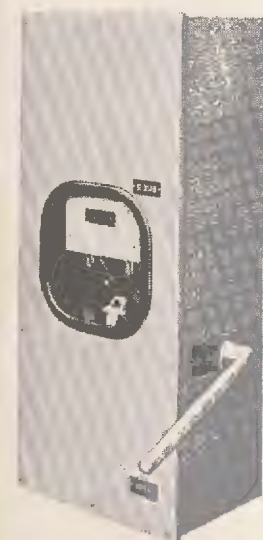
250 Volt DC, 2 Pole-2 Wire — Not Fusible			
Ampere Rating	Dimensions		
	H	W	D
800	42	18	12
1200	42	18	12
1600	54	24	14
2000	54	24	14
2500	54	24	14
3000	54	30	18
4000			

ORDERING INFORMATION REQUIRED

1. Class and type number.
2. Number of poles and wires.
3. Voltage, ampere rating and whether AC or DC.
4. Type of cable, lug sizes and quantity required.
5. If special features are required, order as "Class 9810, similar to Type except (clearly describe special features)".



Motor Operated
BOLT-LOC Switch
in General Purpose
Enclosure



Manual Side Operated
BOLT-LOC Switch in
Dust-tight Enclosure



SQUARE-Duct® & FITTINGS

SQUARE-Duct

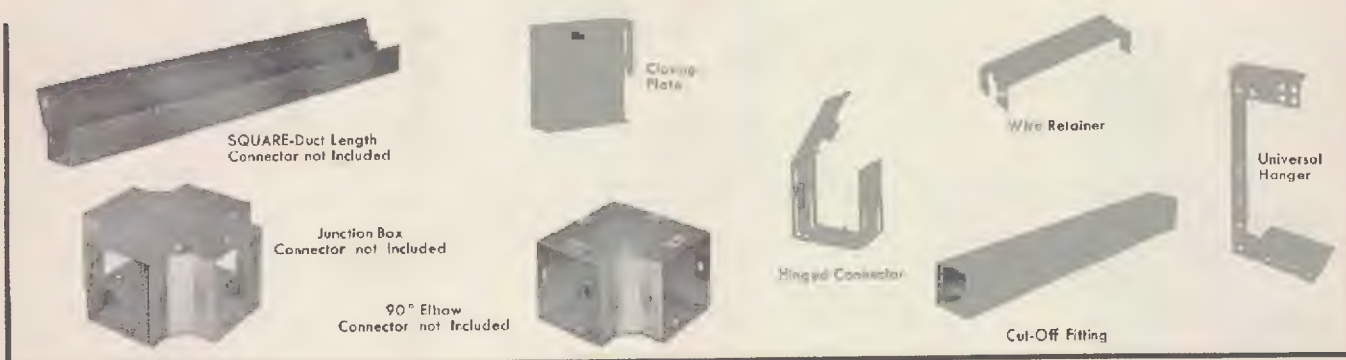
SQUARE-Duct combination wireway is usable as either Hinge Cover or Screw Cover Duct. It provides full lay-in features throughout its entire installation, eliminating threading and pulling of conductors. Hinge covers are quickly removed and replaced by pressing spring tabs. The same cover has keyhole slots to accept captive screws locking the cover securely closed. The entire run may be sealed. All SQUARE-Duct components are U/L listed, File No. 6625 as steel enclosed wireway and auxiliary gutter. Knockouts match other Square D switches, breakers, service entrance equipment, contactors and starters. Finish — Gray baked enamel.

NO CONNECTORS ARE FURNISHED WITH LENGTHS OR FITTINGS

		2½" x 2½"				4" x 4"				6" x 6"				8" x 8"			
Component	Description	Cat. No.		Wt.	Price	Cat. No.		Wt.	Price	Cat. No.		Wt.	Price	Cat. No.		Wt.	Price
		Knock-outs	Without Knockouts			Knock-outs	Without Knockouts			Knock-outs	Without Knockouts			Without Knockouts			
Length.....	1 Foot.....	LD21	LD21WK	2¾	\$ 2.50	LD41	LD41WK	4	\$ 3.10	LD61	LD61WK	6	\$ 6.80	LD81	8	\$11.40	
	2 Foot.....	LD22	LD22WK	5	4.00	LD42	LD42WK	7	5.10	LD62	LD62WK	11	8.90	LD82	17	17.50	
	3 Foot.....	LD23	LD23WK	7½	8.80	LD43	LD43WK	11	8.20	LD63	LD63WK	16	12.30	LD83	26	25.00	
	4 Foot.....	LD24	LD24WK	10	9.20	LD44	LD44WK	15	10.80	LD64	LD64WK	22	16.70	LD84	34	31.00	
	5 Foot.....	LD25	LD25WK	11¾	10.90	LD45	LD45WK	18	12.30	LD65	LD65WK	26½	20.70	LD85	42	36.00	
	10 Foot.....	LD210	LD210WK	24	22.50	LD410	LD410WK	36	25.00	LD610	LD610WK	53	43.00				
Elbow.....	90 degrees.....	LD290L		1	6.50	LD490L		3	7.60	LD690L		8	10.60	LD88L	20	18.40	
	90 degree sweep bend.....					LD490LS		3	16.10	LD690LS		10	22.40				
	45 degrees.....	LD245L		1	5.10	LD445L		3	6.40	LD645L		7	8.90	LD845L	20	16.40	
	22½ degrees.....	LD225L		1	5.10	LD425L		3	6.40	LD625L		5	8.90				
Tee.....	Branch from runs.....	LD2T		2	9.30	LD4T		4	10.80	LD6T		8	12.40	LD88T	19	35.00	
Junction Box.....	For T, L or Cross (4 sides—1 opening each)	LD2J		2	10.50	LD4J		4	12.40	LD6J		9	12.40	LD88J	30	35.00	
Pull Box.....	For T, L or Cross (2 sides—1 opening)					LD4PB		14	34.00	LD6PB		26	69.00				
	(2 sides—2 openings)																
Telescope.....	Slide adjustment.....	LD2TF		5	9.50	LD4TF		5	9.50	LD6TF		9	40.00				
Transposition Section.....	Rotates wireway 90°	LD21TS		3	4.30	LD41TS		4	5.50	LD61TS		6	12.00				
*Connector.....	Couples lengths and fittings	LD2C		¾	.65	LD4C		¾	.65	LD6C		1	1.30	LD88C	1	1.80	
Hanger.....	Universal—drop or side.....	LD2H		¾	1.10	LD4H		1¼	1.40	LD6H		2½	4.30	LD88H	3	6.00	
Closing Plate.....	Seals openings.....	LD2CP	LD2CPWK	¾	.65	LD4CP	LD4CPWK	¾	.65	LD6CP	LD6CPWK	1	1.30	LD88E	2	1.80	
Wire Retainer.....	Snap-in spring steel strap.....	LD2WR		¾	.20	LD4WR		¾	.25	LD6WR		¾	.30				
Adaptor.....	Connects to panel square duct, etc.....	LD22A		1	2.20	LD44A		1½	2.50	LD66A		4	3.80	LD88A	2	5.50	
Reducer.....	4" x 4" to 2½" x 2½"					LD42R		1	5.10	LD64R		2	10.40	LD88R	2	12.00	
	5" x 6" to 4" x 4"																
	8" x 8" to 6" x 6"																
Gusset.....	Mount for vertical wall (No hanger required)	LD2GB		¾	1.10	LD4GB		¾	1.40	LD6GB		1	4.30				
Bracket.....		LD23N		1½	2.80	LD43N		1	3.30	LD63N		2	6.80				
Nipple.....	4 Inch.....	LD26N		1	2.80	LD46N		2	3.30	LD66N		3	6.80				
	6 Inch.....	LD29N		2	2.80	LD49N		3	3.30	LD69N		4½	6.80				
Cut-off Fitting.....	For cutting odd dimensions 3 Foot.....	LD23CF		7½	6.80	LD43CF		11	8.20	LD63CF		16	12.30	LD83CF	26	25.00	

*Connectors to adapt SQUARE-Duct to existing competitive duct are available. For information contact your nearest Square D field office.

Dimensions, Page 42



RAINTIGHT WIREWAY

Raintight wireway is for ganging meter devices, panels, switches, etc. Each length is a completely enclosed section with a removable cover that has a provision for sealing. Two sizes of concentric knockouts (one ½, ¾, 1, 1½ and two 1¼, 1½, 2, 2½ per foot) are located along the bottom of the wireway on 3" centers. These knockouts provide easy ganging of service equipment. Lengths without knockouts are available at standard price — add WK suffix to Cat. No. Finish: Gray baked enamel.

Description	4" x 4"		6" x 6"	
	Cat. No.	Price	Cat. No.	Price
1 Foot Length.	RD41	\$ 7.10	RD61	\$ 14.80
2 Foot Length.	RD42	10.60	RD62	18.30
3 Foot Length.	RD43	15.30	RD63	25.00
4 Foot Length.	RD44	18.90	RD64	33.00
5 Foot Length.	RD45	22.90	RD65	40.00



JIC WIREWAY & TROUGHS

Type JIC Sectional Oiltight Wireway and fittings are used to protect runs of electrical wiring from oil, water, coolants, dirt or dust as well as physical damage, and may be used either indoors or outdoors. This wireway is manufactured to JIC and NMTBA standards for Industrial Control Equipment. It is available in four standard sizes 2½" x 2½", 4" x 4", 6" x 6" and 8" x 8". Lengths and fittings are made of 14 gauge steel with 10 gauge welded flanges. Straight lengths have hinged covers with sponge neoprene gasket all around and are held closed with external clamps. A ⅛" solid neoprene gasket is provided for placing between flanges when sections and fittings are bolted together. All lengths and fittings are without knockouts. Finish is a gray prime coat over a phosphated surface.

Type JIC Sectional Wireway and Enclosed wiring troughs are generally used in conjunction with industrial machinery and consequently have never been submitted for U/L listing.

**JIC
WIREWAY**

Description	No. of Gaskets Furnished	2½" x 2½"		4" x 4"		6" x 6"		8" x 8"	
		Cat. No.	Price	Cat. No.	Price	Cat. No.	Price	Cat. No.	Price
Straight Length — 1 foot	1	JD-21	\$14.20	JD-41	\$17.30	JD-61	\$21.10	JD-81	\$33.00
2 foot	1	JD-22	20.80	JD-42	23.70	JD-62	28.00	JD-82	46.00
3 foot	1	JD-23	25.00	JD-43	28.00	JD-63	38.00		
4 foot	1	JD-24	28.00	JD-44	33.00	JD-64	48.00		
5 foot	1	JD-25	31.00	JD-45	38.00	JD-65	59.00	JD-85	78.00
10 foot	1	JD-210	58.00	JD-410	65.00	JD-610	100.00		
90° Elbow	1	JD-290L	16.70	JD-490L	20.70	JD-690L	25.00	JD-890L	38.00
45° Elbow	1	JD-245L	16.70	JD-445L	20.70	JD-645L	25.00	JD-845L	38.00
Cross	2	JD-2X	27.00	JD-4X	35.00	JD-6X	46.00	JD-8X	61.00
Tee	2	JD-2T	22.00	JD-4T	25.00	JD-6T	35.00	JD-8T	51.00
Telescope Fitting	1	JD2TF	20.50	JD-4TF	21.80	JD-6TF	27.00	JD-8TF	41.00
Cut-off Fitting	1	JD-2CF	10.30	JD-4CF	14.20	JD-6CF	17.70	JD-8CF	28.00
Box Adaptor	1	JD-2A	3.70	JD-4A	5.20	JD-6A	6.70	JD-8A	8.40
Closure Plate	1	JD-2CP	2.10	JD-4CP	3.70	JD-6CP	4.50	JD-8CP	6.60
Drop Hanger	0	JD-2DH	3.30	JD-4DH	4.50	JD-6DH	5.90	JD-8DH	11.60
Bracket Hanger	0	JD-2BH	2.20	JD-4BH	3.00	JD-6BH	4.20	JD-8BH	11.30
Reducer Bushing — 4" to 2½" Center Hole	1			JD-42RC	8.70				
4" to 2½" Edge Hole	1			JD-42RE	8.70				
6" to 4" Center Hole	1					JD-64RC	10.20		
6" to 4" Edge Hole	1					JD-64RE	10.20		
8" to 6" Center Hole	1							JD-86RC	13.60
8" to 6" Edge Hole	1							JD-86RE	13.60
Gasket & Screws (Extra)	1	JD-2G	.75	JD-4G	1.00	JD-6G	1.30	JD-8G	1.90

Dimension Page 42.

Type JIC Totally Enclosed Wiring Troughs are dust proof and water-tight. They are used to house electrical wiring where protection against oil, coolants, water, dust or dirt, as well as physical damage, is required. This wireway is manufactured to JIC specifications. It is made of 14 gauge steel with welded seams ground and polished. A removable cover, with a sponge neoprene gasket, is attached to the trough by a chain at each end and is latched securely with external clamps. Troughs have external mounting feet and are without knockouts or openings. Finish is a baked gray enamel over a phosphated surface.

**JIC
WIRING
TROUGHS**

Description	2½" x 2½"		4" x 4"	
	Cat. No.	Price	Cat. No.	Price
1 Foot Length (12")	JT-21	\$12.10	JT-41	\$14.50
1½ Foot Length (18")	JT-2018	14.90	JT-4018	17.70
2 Foot Length (24")	JT-22	17.70	JT-42	20.90
2½ Foot Length (30")			JT-4030	23.70
3 Foot Length (36")	JT-23	20.50	JT-43	26.00
4 Foot Length (48")	JT-24	23.50	JT-44	30.00
5 Foot Length (60")	JT-25	28.00	JT-45	39.00
6 Foot Length (72")			JT-46	44.00

Note: 6" x 6" and 8" x 8" Troughs available on special order. Consult factory.

Dimension Page 42

CONDUCTOR TABLE — NO DERATING NECESSARY UP TO 30 CONDUCTORS OR 20% FILL — N.E.C. 352-5

***NOTE:** The 1968 National Electrical Code limits installations to 30 conductors in one wireway except where derated according to tables 310-12 through 310-15, N.E.C., or where special permission has been obtained from the local authority enforcing the Code or where conductors in excess of 30 are for signalling circuits or are control wires between a motor and its starter and used only for starting duty, and other exceptions as noted in 520-5 (theaters) and 620-32 (elevators).

†Areas for Type RWH & RHH are .0327 & .0384 for sizes 14 & 12 respectively.

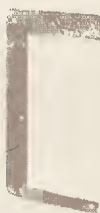
•Areas for Type THW are .0206, .0251, .0311 and .0526 for sizes 14, 12, 10 & 8 respectively.

Conductor Size	Area of Conductor		Maximum Number of Conductors All of One Size							
	Type RHH, RWH & RHM	Type T, TW & THW	2½" x 2½" Duct		4" x 4" Duct		6" x 6" Duct		8" x 8" Duct	
	A	B	A	B	A	B	A	B	A	B
4	.0230†	.0135•	*54	*92	*139	*237	*313	*533	*557	*950
6	.0278†	.0172•	*45	*72	*115	*186	*259	*428	*461	*744
10	.0460	.0224•	27	*55	*64	*142	*156	*321	*278	*570
8	.0760	.0408•	16	30	*42	*78	*94	*176	*168	*314
6	.1238	.0819	10	15	25	*39	*58	*87	*103	*158
4	.1605	.1087	7	11	19	29	*44	*66	*79	*107
3	.1817	.1263	6	9	17	25	*39	*57	*70	*101
2	.2067	.1473	5	8	15	21	*34	*48	*61	*87
1	.2715	.2027	4	6	11	15	26	*35	*47	*63
0	.3107	.2367	4	5	10	13	23	30	*41	*54
00	.3578	.2781	3	4	8	11	20	25	*35	*46
000	.4151	.3288	3	3	9	12	17	21	30	*39
0000	.4840	.3904	2	3	6	9	14	18	26	*32
250,000	.5917	.4877	2	2	5	6	12	14	21	26
300,000	.6837	.5581	1	2	4	5	10	12	18	22
400,000	.8365	.6969	1	1	3	4	8	10	15	18
500,000	.9834	.8316	1	1	3	3	7	8	13	15

A — Type RHH, RWH & RHM
B — Type T, TW & THW
Areas given in square inches



Elbow



Drop Hanger



Wiring Trough



Tee



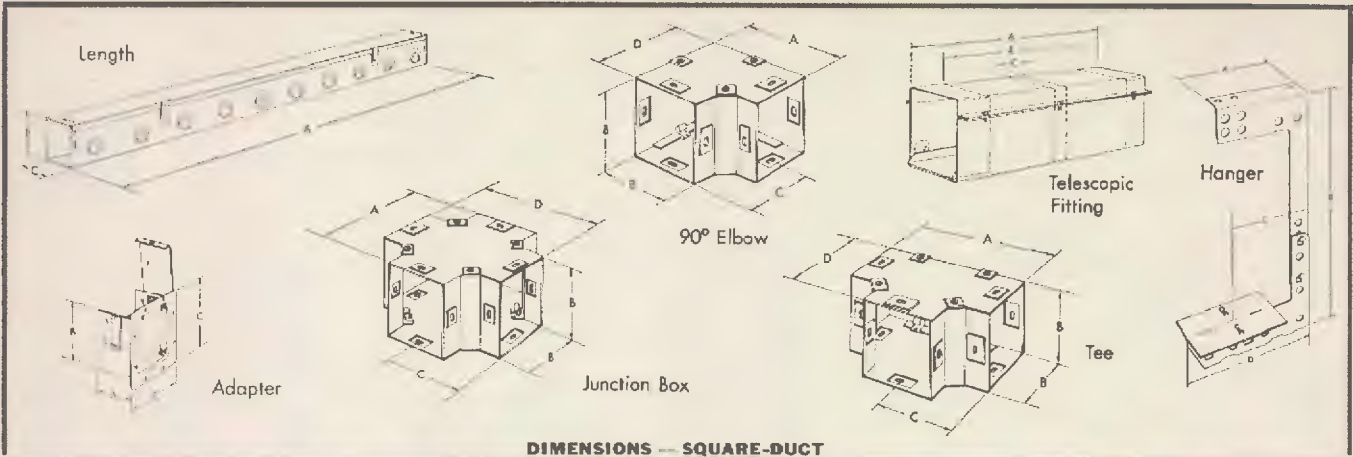
Bracket Hanger



Sectional Wireway

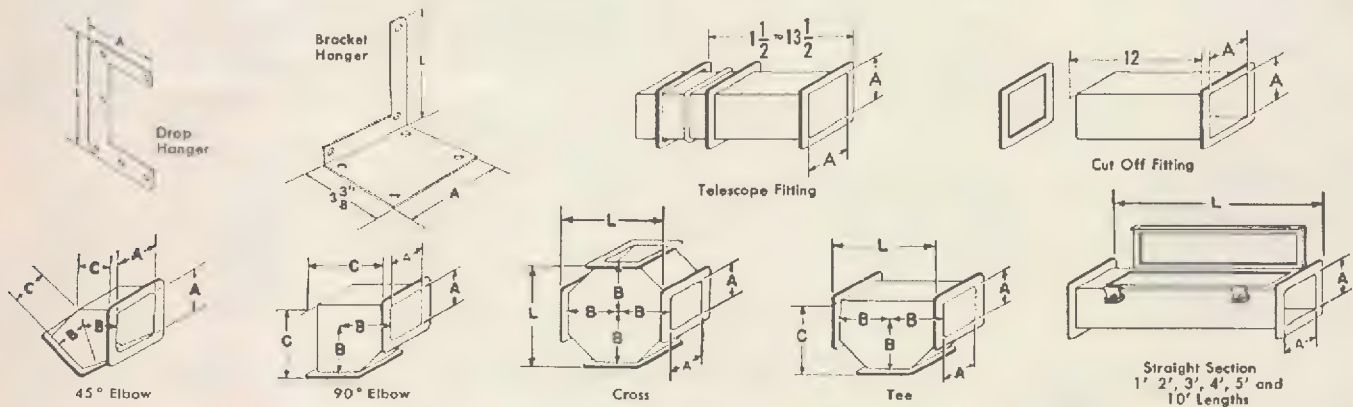


JIC & SQUARE-Duct® WIREWAY DATA



DIMENSIONS — SQUARE-DUCT

2½" x 2½" — Knockouts ½, ¾, 1, 1¼					4" x 4" — Knockouts ½, ¾, 1, 1¼					6" x 6" — Knockouts ½, ¾, 1, 1¼, 1½, 2					8" x 8" — No Knockouts				
Cat. No.	A	B	C	D	Cat. No.	A	B	C	D	Cat. No.	A	B	C	D	Cat. No.	A	B	C	D
LD21	12	2½	2½		LD41	12	4½	4½		LD61	12	6½	6½		LD81	12	8	8	
LD22	24	2½	2½		LD42	24	4½	4½		LD62	24	6½	6½		LD82	24	8	8	
LD23	36	2½	2½		LD43	36	4½	4½		LD63	36	6½	6½		LD83	36	8	8	
LD24	48	2½	2½		LD44	48	4½	4½		LD64	48	6½	6½		LD84	48	8	8	
LD25	60	2½	2½		LD45	60	4½	4½		LD65	60	6½	6½		LD85	60	8	8	
LD210	120	2½	2½		LD410	120	4½	4½		LD610	120	6½	6½						
LD290L	4½	2½	3½	4½	LD490L	6½	4½	4½	6½	LD690L	8½	6½	5½	8½	LD88L	10½	8½	6½	10½
LD245L	27½	2½		27½	LD490LS	97½	4½	7½	97½	LD690LS	147½	6½	11	147½	LD845L	57½	8½		57½
LD225L	25½	2½		25½	LD425L	25½	4½		25½	LD625L	35½	6½		35½					
LD2T	6½	2½	3½	4½	LD4T	8½	4½	4½	8½	LD6T	11½	6½	5½	8½	LD88T	13½	8½	6½	10½
LD2J	6½	2½	3½	6½	LD4J	8½	4½	4½	8½	LD6J	11½	6½	5½	11½	LD88J	13½	8½	6½	13½
LD2TF	15	11½	½		LD4PB	147½	4½		147½	LD6PB	191½	6½		191½					
LD2H	45½	10	3½	4½	LD4TF	15	11½	½		LD6TF	15	11½	½		LD88H	57½	167½	5½	9½
LD22A	3¼	2½	3½		LD4H	45½	11½	3½	6	LD6H	57½	17	5½	8½	LD88A	2	8½	9½	
					LD44A	3¼	4½	5½		LD66A	47½	6½	7½						



DIMENSIONS — JIC WIREWAY

2½" x 2½"					4" x 4"					6" x 6"					8" x 8"				
Cat. No.	A	B	C	L	Cat. No.	A	B	C	L	Cat. No.	A	B	C	L	Cat. No.	A	B	C	L
JD21	2½			12	JD41	4			12	JD61	6			12	JD81	8			12
JD22	2½			24	JD42	4			24	JD62	6			24	JD82	8			24
JD23	2½			36	JD43	4			36	JD63	6			36					
JD24	2½			48	JD44	4			48	JD64	6			48					
JD25	2½			60	JD45	4			60	JD65	6			60	JD85	8			60
JD210	2½			120	JD410	4			120	JD610	6			120					
JD290L	2½	4½	5½		JD490L	4	5	7		JD690L	6	6	9		JD890L	8	8	12	
JD245L	2½	2	2½		JD445L	4	2½	3¼		JD645L	6	3	4¼		JD845L	8	4	5¼	
JD2X	2½	4½		8½	JD4X	4	5		10	JD6X	6	6		12	JD8X	8	8		16
JD2T	2½	4½	5½	8½	JD4T	4	5	7	10	JD6T	6	6	9	12	JD8T	8	8	12	16
JD2CF	2½				JD4CF	4				JD6CF	6				JD8CF	8			
JD2DH	2½			9¼	JD4DH	4	6		11¾	JD6DH	6			15¼	JD8DH	8			18¼
JD2BH	2½			45½	JD4BH	4	5½		6½	JD6BH	6	¾	7½	8½	JD8BH	8	9½		19½
JD21	2½			12	JD41	4			12										
JD2018	2½			18	JD4018	4			18										
JD22	2½			24	JD42	4			24										
					JD4030	4			30										
JD23	2½			36	JD43	4			36										
JD24	2½			48	JD44	4			48										
JD25	2½			60	JD45	4			60										
					JD46	4			72										

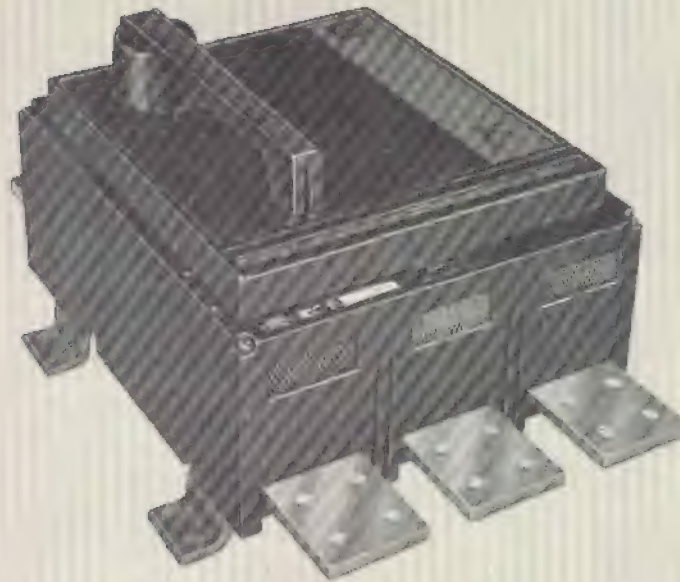


MOLDED CASE CIRCUIT BREAKERS

Front or rear accessibility — convenient mounting

Push-to-trip feature is standard

Trip-free mechanism — position indicating handle



Rating may be changed in the field without disturbing any live parts

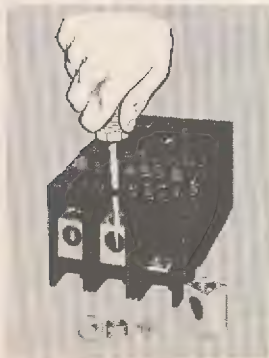
UL listed for mounting in any position — line connections to either end

Lugs for up to 750 MCM AL/CU cable included in price

2000A* PA BREAKER JOINS THE INDUSTRIAL CIRCUIT BREAKER LINE

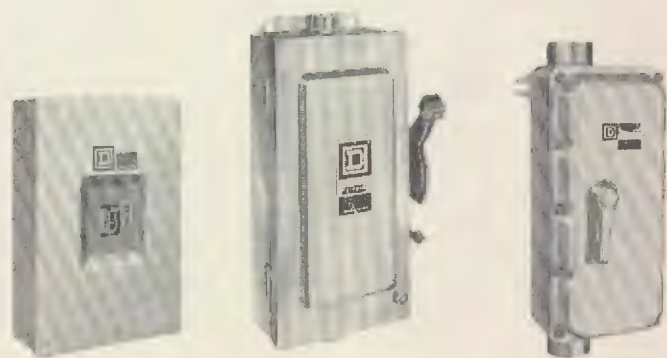


• **PUSH-TO-TRIP** is an exclusive feature on all separately mounted breakers. This mechanism consists of a small rod which trips the breaker when pushed. Recessed, and one-eighth inch in diameter, it is impossible to push without the use of a small tool or pencil, which insures against accidental tripping. It provides a method of tripping the breaker periodically.



• **FRONT-REMOVABLE LUGS** are suitable for either aluminum or copper conductors. Furnished on each end of the breakers, they can be removed or changed from the front even after the breakers have been mounted. This allows easy lug changing at the time of installation and provides quick accessibility during maintenance. Copper-only lugs are available as alternate terminals on all circuit breakers.

- **FULL LINE 15-2000 AMPS**
- **SINGLE MAGNETIC ADJUSTMENT**
- **PERMANENT TRIP**
- **MOUNTS IN ANY POSITION**
- **TRIP-FREE**
- **FEED FROM EITHER END**
- **FULL LINE OF SEPARATE ENCLOSURES: NEMA 1, 3R, 12, 4, 5, 7, 9**



*AVAILABLE AS 1600A NOW. 2000A EXPECTED TO BE AVAILABLE IN JUNE 1970

CIRCUIT BREAKER DATA

CIRCUIT BREAKER INTERRUPTING CAPACITY

Catalog Number Prefix	Max. AC Volt Rating	No. Poles	Ampere Rating	INTERRUPTING CAPACITY — R.M.S. SYMMETRICAL AMPERES (Based on U/L Listed Ratings)									Federal Specs. W-C-375a
				VOLTS AC						VOLTS DC			
				120	120/240	240	277	480	600	125	125/250	250	
QO-QOB	120/240	1	15-50	.....	5000	.....	.....	.....	.....	.....	.....	.....	1a
QOU	120/240	3	15-70	.....	5000	.....	.....	.....	.....	.....	.....	.....	1a
	240		15-60	.....	.....	5000	.....	.....	.....	.....	.....	.....	1b
QOH-QOBH	120/240	1	15-30	.....	10000	.....	.....	.....	.....	.....	.....	.....	...
	240	2	15-30	.....	10000	5000	.....	.....	.....	.....	.....	.....	...
	240	2	40-50	.....	.....	5000	.....	.....	.....	.....	.....	.....	...
	240	3	15-30	.....	.....	10000	.....	.....	.....	.....	.....	.....	...
QH-QHB	120/240	1	15-30	.....	65000	.....	.....	.....	.....	.....	.....	.....	...
	120/240	2	15-30	.....	65000	.....	.....	.....	.....	.....	.....	.....	...
	240	3	15-30	.....	.....	65000	.....	.....	.....	.....	.....	.....	...
Q1-Q1B-Q1L	240	1	70-100	.....	.....	5000	.....	.....	.....	.....	.....	.....	1b
	240	2	70-100	.....	.....	5000	.....	.....	.....	.....	.....	.....	1b
	240	3	70-100	.....	.....	5000	.....	.....	.....	.....	.....	.....	1b
Q1H-Q1BH-Q1LH	240	1	40-100	10000	.....	5000	.....	.....	.....	.....	.....	.....	...
	240	2	40-100	.....	10000	5000	.....	.....	.....	.....	.....	.....	...
	240	3	40-100	.....	.....	10000	.....	.....	.....	.....	.....	.....	...
AI-A1B-A1L	240AC 125 DC	1	15-100	10000	.....	5000	.....	.....	.....	5000	.....	.....	2b
AIU	240AC 125/250 DC	2	15-100	.....	.....	10000	.....	.....	.....	5000	.....	.....	2c
	240	3	15-100	.....	.....	10000	.....	.....	.....	.....	.....	.....	2c
YB	277	1	15-100	.....	.....	.....	10000	.....	.....	.....	.....	.....	2a
FY-FYB	120AC 125DC	1	15-100	10000	.....	.....	.....	.....	.....	5000	.....	.....	2b
	277	1	15-100	.....	.....	.....	10000	.....	.....	.....	.....	.....	2a
FA-FAB-FAL	120AC 125DC	1	15-100	10000	.....	.....	.....	.....	.....	5000	.....	.....	2b
240 Type	240AC 250DC	2	15-100	.....	.....	.....	.....	.....	.....	.....	5000	.....	2c
	240	3	15-100	.....	.....	10000	.....	.....	.....	.....	.....	.....	2c
FA-FAB-FAL	277	1	15-100	.....	.....	.....	10000	.....	.....	.....	.....	.....	2a
480 Type	480AC 250DC	2	15-100	.....	.....	18000	.....	14000	.....	.....	.....	10000	...
	480	3	15-100	.....	.....	18000	.....	14000	.....	.....	.....	.....	...
FA-FAB-FAL	277AC 250DC	1	15-100	18000	.....	.....	14000	.....	.....	.....	.....	10000	2a
600 Type	600AC 250DC	2	15-100	.....	.....	18000	.....	14000	14000	.....	.....	10000	2d
	600	3	15-100	.....	.....	18000	.....	14000	14000	.....	.....	10000	2d
FH-FHB-FHL	277AC 250DC	1	15-100	65000	.....	.....	25000	.....	.....	.....	.....	10000	2a
	600AC 250DC	2	15-100	.....	.....	65000	.....	25000	18000	.....	.....	10000	2f
	600	3	15-100	.....	.....	65000	.....	25000	18000	.....	.....	10000	2f
Q2-Q2B-Q2L	240	2	100-225	.....	10000	.....	.....	.....	.....	.....	.....	.....	...
	240	3	100-225	.....	10000	.....	.....	.....	.....	.....	.....	.....	...
Q2L-H	240	2	100-225	.....	.....	18000	.....	.....	.....	.....	.....	.....	...
Q2-Lr, Q2B-Lr	240	2	100-225	.....	.....	18000	.....	.....	.....	.....	.....	.....	...
KA-KAB-KAL	600AC 250DC	2	70-225	.....	.....	25000	.....	22000	22000	.....	.....	10000	3b
	600	3	70-225	.....	.....	25000	.....	22000	22000	.....	.....	.....	3b
KH-KHB-KHL	600AC 250DC	2	70-225	.....	.....	65000	.....	35000	25000	.....	.....	10000	3d
	600	3	70-225	.....	.....	65000	.....	35000	25000	.....	.....	.....	3d
LA-LAB-LAL	600AC 250DC	2	125-400	.....	.....	42000	.....	30000	22000	.....	.....	10000	4b
	600	3	125-400	.....	.....	42000	.....	30000	22000	.....	.....	.....	4b
LH-LHB-LHL	600A 250DC	2	125-400	.....	.....	65000	.....	35000	25000	.....	.....	10000	4c
	600	3	125-400	.....	.....	65000	.....	35000	25000	.....	.....	.....	4c
MA-MAL	600A 30DC	2	125-1000	.....	.....	42000	.....	30000	22000	.....	.....	14000	5a
	600	3	125-1000	.....	.....	42000	.....	30000	22000	.....	.....	.....	5a
MH-MHL	600AC 250DC	2	125-1000	.....	.....	65000	.....	35000	25000	.....	.....	14000	5b
	600	3	125-1000	.....	.....	65000	.....	35000	25000	.....	.....	.....	5b
PAF-PAL	500	2	800-1600	.....	.....	65000	.....	50000	42000	.....	.....	.....	...
	500	3	800-1600	.....	.....	65000	.....	50000	42000	.....	.....	.....	...

TERMINAL LUGS Aluminum — Copper

Breaker	Ampere Rating	Wire Size†		Al or Cu Conductors		Cu Only Conductors		Package Quantity
		Aluminum	Copper	Catalog No.	Price Each	Catalog No.	Price Each	
FA	15-30	#12-#8	#14-#8	AL 100 FA	\$.55	CU 100 FA	\$ 1.20	24
	35-100	#8-#1/0	#8-#1/0	AL 100 FA	.55			24
	15-100		#14-#1/0					24
Q2	70-225	#4-300MCM	#4-300MCM					
KA	70-225	#4-300MCM	#4-300MCM	AL 225 KA	2.80	CU 225 KA	3.40	12
	70-225		#4-250MCM					12
LA	125-175	#1-#4/0	#1-#4/0	AL 400 LA	2.80			12
	200-400	1—#3/0-600MCM or	1—#3/0-600MCM or	AL 400 LA	2.80			12
		2—#3/0-250MCM	2—#3/0-250MCM					
	125-400	1—#1-600MCM or	1—#1-600MCM or			CU 400 LA	3.40	12
		2—#1/0-250MCM	2—#1/0-250MCM					
MA	125-175	#1-#4/0	#1-#4/0	AL 400 LA	2.80			12
	200-400	1—#3/0-600MCM or	1—#3/0-600MCM or	AL 400 LA	2.80			12
		2—#3/0-250MCM	2—#3/0-250MCM					
	125-400	1—#1-600MCM or	1—#1-600MCM or			CU 400 LA	3.40	12
		2—#1/0-250MCM	2—#1/0-250MCM					
	200-1000	3—#3/0-500MCM	3—#3/0-500MCM	AL 900 MA	11.70			3
	200-1000					CU 1000 MA	12.30	3
PA*	800-2000	#3/0-750MCM	#3/0-750MCM	SK 4098	6.40			1

*Lugs accept one wire per lug; for number of lugs required see PA listing on Page 47.

†UL listed wire range.

•Cu only conductors must be used with MA 1000A circuit breakers.

Cu only lugs may be factory installed on all circuit breakers as listed above. Add 10% to list price of FA, KA, LA and MA circuit breakers. Not available on Q2 or PA circuit breakers.



MOLDED CASE CIRCUIT BREAKERS

SPECIAL PURPOSE UNIT BREAKER ONLY

Type QOU circuit breakers are U/L listed. They meet requirements of Federal Specifications W-C-375a as indicated on Page 44. Line and load terminal lugs listed for each breaker are included and are reversible for front or rear access. *Brackets are provided with breakers for either Surface (Flat Pan) or Flush (plate) mounting.

TYPE QOU

5,000 A.I.C. ●		Single Pole 120/240 V. AC		Double Pole 120/240 V. AC		Three Pole 240 V. AC		Terminal Lug Wire Size
Amps	Volts	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price	
15	240 V. AC	QOU 115	\$ 4.10	QOU 215	\$ 9.10	QOU 315	\$29.00	#14-12 Cu
20		QOU 120	4.10	QOU 220	9.10	QOU 320	29.00	#14-12 Cu
30		QOU 130	4.10	QOU 230	9.10	QOU 330	29.00	#10-4 Cu
40		QOU 140	4.10	QOU 240	9.10	QOU 340	29.00	#10-4 Cu
50		QOU 150	4.10	QOU 250	9.10	QOU 350	29.00	#10-4 Cu
60				QOU 260	9.10			#10-4 Cu
70				QOU 270	17.30			#10-4 Cu

Type QIU circuit breakers are U/L listed. They meet requirements of Federal Specifications W-C-375a as indicated on Page 44. Line and load terminal lugs listed for each breaker are included. Brackets are provided with breakers for Surface (Flat Pan) mounting.

TYPE QIU

5,000 A.I.C. ●		Single Pole 240 V. AC		Double Pole 240 V. AC		Three Pole 240 V. AC		Terminal Lug Wire Size
Amps	Volts	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price	
60	240 V. AC			QIU 280	\$21.10	QIU 360	\$29.00	#6-0 Cu, #4-0 Al
70				QIU 290	21.10	QIU 370	39.00	#6-0 Cu, #4-0 Al
80				QIU 2100	21.10	QIU 380	39.00	#6-0 Cu, #4-0 Al
90						QIU 390	39.00	#6-0 Cu, #4-0 Al
100						QIU 3100	39.00	#6-0 Cu, #4-0 Al

Type A1U circuit breakers are U/L listed. They meet requirements of Federal Specifications W-C-375a as indicated on Page 44. Line and load terminal lugs listed for each breaker are included. Brackets are provided with breakers for Surface (Flat Pan) mounting.

TYPE A1U

Amps	Volts	Single Pole 240 V. AC 125 V. DC		Double Pole 240 V. AC 125/250 V. DC		Three Pole 240 V. AC		Terminal Lug Wire Size
		Catalog Number	Price	Catalog Number	Price	Catalog Number	Price	
15	240 V. AC	A1U 115	\$13.40	A1U 215	\$34.00	A1U 315	\$49.00	#14-8 Cu, #12-8 Al
20		A1U 120	13.40	A1U 220	34.00	A1U 320	49.00	#14-8 Cu, #12-8 Al
30		A1U 130	13.40	A1U 230	34.00	A1U 330	49.00	#12-4 Cu, #10-4 Al
40		A1U 140	13.40	A1U 240	34.00	A1U 340	49.00	#12-4 Cu, #10-4 Al
50		A1U 150	13.40	A1U 250	34.00	A1U 350	49.00	#12-4 Cu, #10-4 Al
60		A1U 160	13.40	A1U 260	34.00	A1U 360	49.00	#6-0 Cu, #4-0 Al
70	125/250 V. DC	A1U 170	27.00	A1U 270	55.00	A1U 370	72.00	#6-0 Cu, #4-0 Al
80		A1U 180	27.00	A1U 280	55.00	A1U 380	72.00	#6-0 Cu, #4-0 Al
90		A1U 190	27.00	A1U 290	55.00	A1U 390	72.00	#6-0 Cu, #4-0 Al
100		A1U 1100	27.00	A1U 2100	55.00	A1U 3100	72.00	#6-0 Cu, #4-0 Al
100	Non-Auto.			A1U 2000	34.00	A1U 3000	49.00	#6-0 Cu, #4-0 Al

● Type QOU and QIU circuit breakers with 10,000 A.I.C. ratings are available. Contact Field Office for catalog number and price.
* Brackets for mounting QOU circuit breakers on Class 9080 mounting channels are available. Order QU-1, \$1.30 for 1-pole QU-2, \$1.60 for 2-pole and QU-3, \$2.00 for 3-pole.

MAGNETIC-TRIP ONLY CIRCUIT BREAKERS

Front adjustable magnetic-only breakers are for use with motor control circuits. A single adjustment sets all trip units continuously between trip ranges shown below. Not UL Listed.

100 AMPERE FRAME — 100 AMPS. MAX. 600 V. AC ADJUSTABLE MAGNETIC TRIP

FA

Maximum Continuous Ampere Rating●	AC Magnetic Trip Settings Amperes		FAL			
			Double Pole 600 V. AC		Three Pole 600 V. AC	
	Low	High	Catalog Number	Price	Catalog Number	Price
2	5	30	FAL 26002M	\$ 72.	FAL 36002M	\$ 92.
4	12	60	FAL 26004M	72.	FAL 36004M	92.
8	25	125	FAL 26008M	72.	FAL 36008M	92.
15	50	250	FAL 26015M	72.	FAL 36015M	92.
30	100	400	FAL 26030M	72.	FAL 36030M	92.
40	160	500	FAL 26040M	72.	FAL 36040M	92.
70	250	750	FAL 26070M	91.	FAL 36070M	112.
100	450	1000	FAL 26100M	91.	FAL 36100M	112.

2-30 A. Lugs accept one #14-8 Cu, #12-8 Al
35-100 A. Lugs accept one #8-1/0 Cu or Al

225 AMPERE FRAME — 225 AMPS. MAX. 600 V. AC ADJUSTABLE MAGNETIC TRIP

KA

Maximum Continuous Ampere Rating●	AC Magnetic Trip Settings Amperes		KAL			
			Double Pole 600 V. AC		Three Pole 600 V. AC	
	Low	High	Catalog Number	Price	Catalog Number	Price
125	625	1250	KAL 26125M	\$203.	KAL 36125M	\$251.
150	750	1500	KAL 26150M	203.	KAL 36150M	251.
175	875	1750	KAL 26175M	203.	KAL 36175M	251.
200	1000	2000	KAL 26200M	203.	KAL 36200M	251.
225	1125	2250	KAL 26225M	203.	KAL 36225M	251.

Lugs accept one #4-300 MCM Cu or Al.

● Circuit breaker provides short circuit protection only. Motor starter must have an overload relay in each conductor to limit continuous current to the maximum continuous ampere rating of the circuit breaker. See page 230 for additional application data.

400 AMPERE FRAME — 400 AMPS. MAX. 600 V. AC ADJUSTABLE MAGNETIC TRIP

LA

Maximum Continuous Ampere Rating●	AC Magnetic Trip Settings Amperes		LAL			
			Double Pole 600 V. AC		Three Pole 600 V. AC	
	Low	High	Catalog Number	Price	Catalog Number	Price
125	625	1250	LAL 26125M	\$358.	LAL 36125M	\$435.
150	750	1500	LAL 26150M	358.	LAL 36150M	435.
175	875	1750	LAL 26175M	358.	LAL 36175M	435.
200	1000	2000	LAL 26200M	358.	LAL 36200M	435.
225	1125	2250	LAL 26225M	358.	LAL 36225M	435.
250	1250	2500	LAL 26250M	358.	LAL 36250M	435.
300	1500	3000	LAL 26300M	358.	LAL 36300M	435.
400	2000	4000	LAL 26400M	358.	LAL 36400M	435.

Lugs accept one #3/0-600 MCM Cu or Al wire, or two #3/0-250 MCM Cu or Al.

1000 AMPERE FRAME — 1000 AMPS. MAX. 600 V. AC ADJUSTABLE MAGNETIC TRIP

MA

Maximum Continuous Ampere Rating●	AC Magnetic Trip Settings Amperes		MAL			
			Double Pole 600 V. AC		Three Pole 600 V. AC	
	Low	High	Catalog Number	Price	Catalog Number	Price
500	2500	5000	MAL 26500M	\$598.	MAL 36500M	\$759.
600	3000	6000	MAL 26600M	598.	MAL 36600M	759.
700	3500	7000	MAL 26700M	780.	MAL 36700M	1002.
800	4000	8000	MAL 26800M	780.	MAL 36800M	1002.
900	4500	9000	MAL 26900M	1107.	MAL 36900M	1276.
1000	5000	10000	MAL 261000M	1107.	MAL 361000M	1276.

Lugs accept three #3/0-500 MCM Cu or Al wire.



MOLDED CASE CIRCUIT BREAKERS

UNIT BREAKER ONLY WITHOUT ENCLOSURES

Circuit breakers are U. L. listed. They meet the requirements of Federal Specification W-C-375a as indicated on Page 44. Circuit breakers listed are for use as replacement breakers in all Square D equipment except I-LINE panelboards. For I-LINE* panelboards see Page 71. Terminal lugs as tabulated are furnished unless otherwise noted on order.

A1

E FRAME BREAKER — 100 AMPERE MAXIMUM 240 V. AC

Ampere ★	Volts	Single Pole 240 V. AC 125 V. DC		Double Pole 240 V. AC 125/250 V. DC		Three Pole 240 V. AC		Terminal Lug Wire Size
		Catalog Number	Price	Catalog Number	Price	Catalog Number	Price	
15	240 V. AC	A1L 115	\$13.40	A1L 215	\$34.00	A1L 315	\$49.00	#14-8 Cu, #12-8 Al
20		A1L 120	13.40	A1L 220	34.00	A1L 320	49.00	#14-8 Cu, #12-8 Al
30		A1L 130	13.40	A1L 230	34.00	A1L 330	49.00	#12-4 Cu, #10-4 Al
40		A1L 140	13.40	A1L 240	34.00	A1L 340	49.00	#12-4 Cu, #10-4 Al
50		A1L 150	13.40	A1L 250	34.00	A1L 350	49.00	#12-4 Cu, #10-4 Al
60	125/250 V. DC	A1L 160	13.40	A1L 260	34.00	A1L 360	49.00	#8-1/0 Cu, #4-0 Al
70		A1L 170	27.00	A1L 270	55.00	A1L 370	72.00	#8-1/0 Cu, #4-0 Al
90		A1L 190	27.00	A1L 290	55.00	A1L 390	72.00	#8-1/0 Cu, #4-0 Al
100		A1L 1100	27.00	A1L 2100	55.00	A1L 3100	72.00	#8-1/0 Cu, #4-0 Al
100				A1L 2000	34.00	A1L 3000	49.00	#8-1/0 Cu, #4-0 Al
100	Non-Auto.							

FA

100 AMPERE FRAME — 100 AMPS. MAX. 240 V. AC PERMANENT TRIP

Ampere ★	Volts	Single pole 240 V. AC 125 V. DC		Double Pole 240 V. AC 125/250 V. DC		Three Pole 240 V. AC		Terminal Lug Wire Size
		Catalog Number	Price	Catalog Number	Price	Catalog Number	Price	
15	240 V. AC	FAL 12015	\$21.40	FAL 22015	\$34.	FAL 32015	\$49.	#14-8 Cu, #12-8 Al
20		FAL 12020	21.40	FAL 22020	34.	FAL 32020	49.	#14-8 Cu, #12-8 Al
30		FAL 12030	21.40	FAL 22030	34.	FAL 32030	49.	#14-8 Cu, #12-8 Al
40		FAL 12040	21.40	FAL 22040	34.	FAL 32040	49.	#8-1/0 Cu or Al
50		FAL 12050	21.40	FAL 22050	34.	FAL 32050	49.	#8-1/0 Cu or Al
60	120/250 V. DC	FAL 12060	21.40	FAL 22060	34.	FAL 32060	49.	#8-1/0 Cu or Al
70		FAL 12070	27.00	FAL 22070	55.	FAL 32070	72.	#8-1/0 Cu or Al
90		FAL 12090	27.00	FAL 22090	55.	FAL 32090	72.	#8-1/0 Cu or Al
100		FAL 12100	27.00	FAL 22100	55.	FAL 32100	72.	#8-1/0 Cu or Al
100		FAL 12000	21.40	FAL 22000	34.	FAL 32000	49.	#8-1/0 Cu or Al
100	Non-Auto.							

FA

100 AMPERE FRAME — 100 AMPS. MAX. 480 V. AC PERMANENT TRIP

Ampere ★	Volts	Single Pole 277 V. AC		Double Pole 480 V. AC, 250 V. DC		Three Pole 480 V. AC		Terminal Lug Wire Size
		Catalog Number	Price	Catalog Number	Price	Catalog Number	Price	
15	277 V. AC	FAL 14015	\$26.	FAL 24015	\$62.	FAL 34015	\$79.	#14-8 Cu, #12-8 Al
20		FAL 14020	26.	FAL 24020	62.	FAL 34020	79.	#14-8 Cu, #12-8 Al
30		FAL 14030	26.	FAL 24030	62.	FAL 34030	79.	#14-8 Cu, #12-8 Al
40		FAL 14040	26.	FAL 24040	62.	FAL 34040	79.	#8-1/0 Cu or Al
50		FAL 14050	26.	FAL 24050	62.	FAL 34050	79.	#8-1/0 Cu or Al
60	250 V. DC	FAL 14060	26.	FAL 24060	62.	FAL 34060	79.	#8-1/0 Cu or Al
70		FAL 14070	31.	FAL 24070	79.	FAL 34070	94.	#8-1/0 Cu or Al
90		FAL 14090	31.	FAL 24090	79.	FAL 34090	94.	#8-1/0 Cu or Al
100		FAL 14100	31.	FAL 24100	79.	FAL 34100	94.	#8-1/0 Cu or Al
100		FAL 14000	24.	FAL 24000	55.	FAL 34000	72.	#8-1/0 Cu or Al
100	Non-Auto.							

FA

100 AMPERE FRAME — 100 AMPS. MAX. 600 V. AC PERMANENT TRIP

Ampere ★	Volts	Single Pole 277 V. AC		Double Pole 600 V. AC, 250 V. DC		Three Pole 600 V. AC		Terminal Lug Wire Size
		Catalog Number	Price	Catalog Number	Price	Catalog Number	Price	
15	250 V. DC	FAL 16015	\$31.	FAL 26015	\$72.	FAL 36015	\$92.	#14-8 Cu, #12-8 Al
20		FAL 16020	31.	FAL 26020	72.	FAL 36020	92.	#14-8 Cu, #12-8 Al
30		FAL 16030	31.	FAL 26030	72.	FAL 36030	92.	#14-8 Cu, #12-8 Al
40		FAL 16040	31.	FAL 26040	72.	FAL 36040	92.	#8-1/0 Cu or Al
50		FAL 16050	31.	FAL 26050	72.	FAL 36050	92.	#8-1/0 Cu or Al
60	600 V. AC	FAL 16060	31.	FAL 26060	72.	FAL 36060	92.	#8-1/0 Cu or Al
70		FAL 16070	38.	FAL 26070	91.	FAL 36070	112.	#8-1/0 Cu or Al
90		FAL 16090	38.	FAL 26090	91.	FAL 36090	112.	#8-1/0 Cu or Al
100		FAL 16100	38.	FAL 26100	91.	FAL 36100	112.	#8-1/0 Cu or Al
100		FAL 16000	11.	FAL 26000	72.	FAL 36000	92.	#8-1/0 Cu or Al
100	Non-Auto.							
100	Auto.			FAL 26000M	91.	FAL 36000M	112.	#8-1/0 Cu or Al

FA

I-75,000* 100 AMPERE FRAME — 100 AMPS. MAX. 600 V. AC PERMANENT TRIP

Ampere ★	Volts	Single Pole 277 V. AC		Double Pole 600 V. AC, 250 V. DC		Three Pole 600 V. AC		Terminal Lug Wire Size
		Catalog Number	Price	Catalog Number	Price	Catalog Number	Price	
15	250 V. DC	FHL 16015	\$46.	FHL 26015	\$117.	FHL 36015	\$137.	#14-8 Cu, #12-8 Al
20		FHL 16020	46.	FHL 26020	117.	FHL 36020	137.	#14-8 Cu, #12-8 Al
30		FHL 16030	46.	FHL 26030	117.	FHL 36030	137.	#14-8 Cu, #12-8 Al
40		FHL 16040	46.	FHL 26040	117.	FHL 36040	137.	#8-1/0 Cu or Al
50		FHL 16050	46.	FHL 26050	117.	FHL 36050	137.	#8-1/0 Cu or Al
60	600 V. AC	FHL 16060	46.	FHL 26060	117.	FHL 36060	137.	#8-1/0 Cu or Al
70		FHL 16070	51.	FHL 26070	135.	FHL 36070	155.	#8-1/0 Cu or Al
90		FHL 16090	51.	FHL 26090	135.	FHL 36090	155.	#8-1/0 Cu or Al
100		FHL 16100	51.	FHL 26100	135.	FHL 36100	155.	#8-1/0 Cu or Al
100				FHL 26000M	135.	FHL 36000M	155.	#8-1/0 Cu or Al
100	Auto.							

*Additional branch ampere ratings in accordance with the 1968 National Electrical Code are available. Refer to numerical listing for prices.

•For use in E-100 series enclosures listed on page 49. For panelboard mounting, substitute "A1B" for "A1L" in catalog numbers. For individual mounting, see "A1U" listing on Page 45.

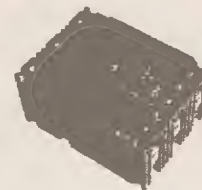
*Trademark of Square D Company



Type A1
E Frame



FA
Single Pole



FA
Three Pole



I-75,000
FA Three Pole

MOLDED CASE CIRCUIT BREAKERS

UNIT BREAKER ONLY WITHOUT ENCLOSURES



Q2
Three Pole



KA
Three Pole



LA
Three Pole



MA
Three Pole



PA
Three Pole
Shown with
Pads Only for
Bus Connection

225 AMPERE FRAME — 225 AMPS. MAX. 240 V. AC PERMANENT TRIP

Q2

Amp. Rating ★	AC Magnetic Trip Settings Amperes		Type Q2				18 000 AIC-RMS Sym. Type Q2-H			
			Double Pole 240 V. AC		Three Pole 240 V. AC		Double Pole 240 V. AC		Three Pole 240 V. AC	
	Low	High	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price
125	Factory Preset	125	Q2L 2125	\$49.	Q2L 3125	\$181.	Q2L 2125H	\$118.	Q2L 3125H	\$185.
150		150	Q2L 2150	49.	Q2L 3150	181.	Q2L 2150H	118.	Q2L 3150H	185.
175		175	Q2L 2175	49.	Q2L 3175	181.	Q2L 2175H	118.	Q2L 3175H	185.
200		200	Q2L 2200	49.	Q2L 3200	181.	Q2L 2200H	118.	Q2L 3200H	185.
225		225	Q2L 2225	49.	Q2L 3225	181.	Q2L 2225H	118.	Q2L 3225H	185.
225	Non-Auto		Q2L 2000	38.	Q2L 3000	85.				

Lugs accept one #4-300 MCM Cu or Al.

★100, 110 Amp. available on order

225 AMPERE FRAME — 225 AMPS. MAX. 600 V. AC PERMANENT TRIP

I-75,000*

KA

Amp. Rating ★	AC Magnetic Trip Settings Amperes		Type KAL				I-75,000 Type KAL			
			Double Pole 600 V. AC 250 V. DC		Three Pole 600 V. AC		Double Pole 600 V. AC 250 V. DC		Three Pole 600 V. AC	
	Low	High	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price
125	625	1250	KAL 26125	\$203.	KAL 36125	\$251.	KHL 26125	\$480.	KHL 36125	\$575.
150	750	1500	KAL 26150	203.	KAL 36150	251.	KHL 26150	480.	KHL 36150	575.
175	875	1750	KAL 26175	203.	KAL 36175	251.	KHL 26175	480.	KHL 36175	575.
200	1000	2000	KAL 26200	203.	KAL 36200	251.	KHL 26200	480.	KHL 36200	575.
225	1125	2250	KAL 26225	203.	KAL 36225	251.	KHL 26225	480.	KHL 36225	575.
225	Non-Auto.		KAL 26000	183.	KAL 36000	203.				
225	Auto.		KAL 26000M	203.	KAL 36000M	251.	KHL 26000M	480.	KHL 36000M	575.

Lugs accept one #4-300 MCM Cu or Al.

★70, 80, 90, 100, 110 Amp. available on order

400 AMPERE FRAME — 400 AMPS. MAX. 600 V. AC PERMANENT TRIP

I-75,000*

LA

Amp. Rating ★	AC Magnetic Trip Settings Amperes		Type LAL				I-75,000 Type LAL			
			Double Pole 600 V. AC 250 V. DC		Three Pole 600 V. AC		Double Pole 600 V. AC 250 V. DC		Three Pole 600 V. AC	
	Low	High	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price
225	1125	2250	LAL 26225	\$358.	LAL 36225	\$435.	LHL 26225	\$642.	LHL 36225	\$784.
250	1225	2500	LAL 26250	358.	LAL 36250	435.	LHL 26250	642.	LHL 36250	784.
300	1500	3000	LAL 26300	358.	LAL 36300	435.	LHL 26300	642.	LHL 36300	784.
350	1750	3500	LAL 26350	358.	LAL 36350	435.	LHL 26350	642.	LHL 36350	784.
400	2000	4000	LAL 26400	358.	LAL 36400	435.	LHL 26400	642.	LHL 36400	784.
400	Non-Auto.		LAL 26000	271.	LAL 36000	328.				
400	Auto.		LAL 26000M	358.	LAL 36000M	435.	LHL 26000M	642.	LHL 36000M	784.

Lugs accept one #3/0-600 MCM Cu or Al wire, or two #3/0-250 MCM Cu or Al.

★125-200 Amp. available on order.

1000 AMP. FRAME — 1000 AMPS. MAX. 600 V. AC PERMANENT TRIP

I-75,000*

MA

Amp. Rating ★	AC Magnetic Trip Settings Amperes		Type MAL				I-75,000 Type MAL			
			Double Pole 600 V. AC 250 V. DC		Three Pole 600 V. AC		Double Pole 600 V. AC 250 V. DC		Three Pole 600 V. AC	
	Low	High	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price
500	2500	5000	MAL 26500	\$ 598.	MAL 36500	\$ 758.	MHL 26500	\$ 787.	MHL 36500	\$ 949.
600	3000	6000	MAL 26600	598.	MAL 36600	758.	MHL 26600	787.	MHL 36600	949.
700	3500	7000	MAL 26700	780.	MAL 36700	1002.	MHL 26700	969.	MHL 36700	1193.
800	4000	8000	MAL 26800	780.	MAL 36800	1002.	MHL 26800	969.	MHL 36800	1193.
900	4500	9000	MAL 26900	1107.	MAL 36900	1278.	MHL 26900	1348.	MHL 36900	1524.
1000	5000	10000	MAL 261000	1107.	MAL 361000	1278.	MHL 261000	1348.	MHL 361000	1524.
1000	Non-Auto.		MAL 26000	478.	MAL 36000	581.				
1000	Auto.		MAL 26000M	1107.	MAL 36000M	1278.	MHL 26000M	1348.	MHL 36000M	1524.

Lugs accept three #3/0-500 MCM Cu or Al wire.

★125-450 Amp. available on order.

2000 AMP. FRAME — 2000 AMPS. MAX. 600 V. AC WITH RATING COLUMNS

PA

Amp. Rating	AC Magnetic Trip Settings Amperes		Type PAL					
			Double Pole 600 V. AC			Three Pole 600 V. AC		
	Low	High	Catalog Number	Price	Lugs Req'd	Catalog Number	Price	Lugs Req'd
800	2000	4000	PAL 26800	\$1499.	12	PAL 36800	\$1875.	18
1000	2500	5000	PAL 261000	1499.	12	PAL 361000	1875.	18
1200	3000	6000	PAL 261200	1525.	16	PAL 361200	1813.	24
1400	3500	7000	PAL 261400	1722.	16	PAL 361400	2148.	24
1600	4000	8000	PAL 261600	1747.	20	PAL 361600	2184.	30
1800	4500	9000	PAL 261800	1842.	24	PAL 361800	2477.	36
2000	5000	10000	PAL 262000	1842.	24	PAL 362000	2477.	36
2000	Non-Auto.		PAL 260000	1499.	24	PAL 360000	1875.	36
2000	Auto.		PAL 262000M	1842.	24	PAL 362000M	2477.	36

Rating Columns to
Change Trip Setting
Available.
Consult Factory.

Standard Breaker
Price Includes Lugs.

Lugs accept: one #3/0-750 MCM Cu or Al wire each. Mounting space for up to six lugs per breaker terminal. Complete breaker price includes required lugs. Deduct \$6.40 per lug if no lugs are required.



*Trademark of Square D Company

SCHEDULE A DISCOUNT

PAGE 47

ADDITIONAL CIRCUIT BREAKER FEATURES

The FA, KA, LA, MA and PA type molded case circuit breakers are available with Shunt trip, Undervoltage trip, Auxiliary switches and Alarm switch **factory assembled only**. Order by indicating the breaker catalog number and full description of the accessory. Available on circuit breakers and automatic circuit interrupters. Contact local Square D field office for use with Non-automatic circuit interrupters. **Not UL listed**

Item	Description	Price		
		FA	KA, LA, MA	PA
Shunt Trip	Max. Control Voltages 250 V. DC or 600 V. AC Specify Voltage and Frequency	\$70.	\$77.	\$110.
Undervoltage Trip	Trips when Voltage 40-60% of Normal Specify Voltage and Frequency	70.	77.	110.
Auxiliary Switch 10 Amps. at 120 V. AC	2 Contacts: 1 "A" and 1 "B" See Footnote	13.	31.	45.
	2 Contacts: 2 "A" or 2 "B" See Footnote	31.	43.	60.
	3 Contacts: Combination See Footnote		53.	80.
	4 Contacts: Combination See Footnote		63.	90.
Alarm Switch	Rating 1 Amp. 120 V. AC	31.	31.	45.

"A" Contacts are closed when breaker is closed. "B" contacts are open when breaker is closed.

REAR CONNECTING STUDS

Breaker Catalog Number Prefix	Ampere Ratings	Stud Catalog Number	Dimensions				Price Per Stud
			Overall Length	Back of Breaker	Diam- eter	Threads, Inch	
FAL, FHL	15-100	FAS-20	2 1/4	2	3/8	16	\$ 6.10
FAL, FHL	15-100	FAS-42	4 7/8	4 1/4	3/8	16	8.00
KAL, KHL	70-225	KAS-21	2 1/4	2 1/8	1/2	13	8.50
KAL, KHL	70-225	KAS-45	5 1/8	4 5/8	1/2	13	11.90
LAL, LHL	125-400	LAS-54	6 1/8	5 1/2	3/4	16	23.00
LAL, LHL	125-400	LAS-114	12 1/8	11 1/2	3/4	16	35.00
MAL, MHL	125-1000	MAS-54	6 1/8	5 1/2	1 1/4	12	43.00
MAL, MHL	125-1000	MAS-114	12 1/8	11 1/2	1 1/4	12	46.00

Use alternate size studs on adjacent poles to obtain proper voltage spacing.

PADLOCK TYPE HANDLE LOCK OFF KITS

Breaker	Cat. No.	Price
Q2 & FY	HPA-FYQ	\$2.00
FA & KA	HPA-FK	2.30
LA & MA	HPA-LM	2.70

Holes for convenient field installation are provided in circuit breaker cases.



*VISI-BLADE CIRCUIT BREAKERS

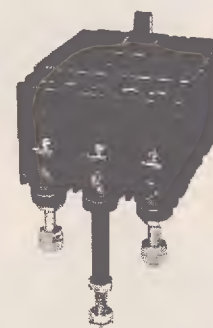
Application: Visible blade breakers are available in all current ratings 15 through 1000A. For catalog numbers add the suffix "V" (ie. FAL 36100V). There is never any doubt as to the condition or position of the contacts — safety can be seen. The sides of the view openings are painted white to reflect more light onto the contact area. Luminescent paint is applied to the movable contact arms to clearly indicate their position. VISI-BLADE breakers are **not UL listed**. Refer to Numerical Listing for prices.

RENEWAL WINDOWS ONLY

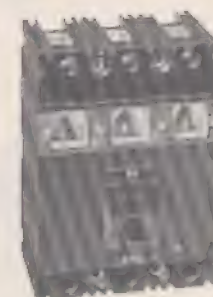
Breaker	Window Replacement Kit	Price
FA	VBC-100	\$2.80
KA	VBC-225	2.80
LA	VBC-400	4.50
MA	VBC-1000	6.40

VOLTAGE TESTERS

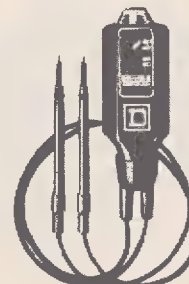
Description	Catalog Number	Price
TESTER (complete with polarity cap) 120-240-480-600 V. AC, 60 Hertz, 120-240-600 V. DC.	5008	\$17.50
TESTER (same as 5008 except with fused leads)	5008S	18.50
POLARITY INDICATING CAP (for any Square D Voltage Tester).	48150-007-50	1.40
CASE , Laminated Vinyl	5002	2.20
CASE , Leather	5002D	4.30



FAL 36100
With Rear
Connecting Studs



FA 3 Pole
VISI-BLADE



Cat. No. 5008
Voltage Tester

*Trademark of Square D Company.



CIRCUIT BREAKER ENCLOSURES

SERVICE ENTRANCE INDOOR and OUTDOOR TYPES

INDUSTRIAL and SPECIAL PURPOSE

Enclosures listed below will be shipped separately. For unit circuit breakers to fit in these enclosures see Pages 52 and 53. Cast enclosures shown are copper free aluminum with stainless steel cover screws.

SERVICE ENTRANCE ENCLOSURE ONLY

Breaker Catalog Number Prefix	Ampere Ratings	NEMA 1 Flush		NEMA 1 Surface		NEMA 3R	
		Enclosure Only	Price	Enclosure Only	Price	Enclosure Only	Price
AIL	15-100	E 100 NF	\$16.	E 100 NS	\$ 16.	E 100 NRB	\$ 45.
FAL, FHL	15-100	FA 100 F	16.	FA 100 S	16.	FA 100 RB	45.
KAL, KHL	70-225	KA 225 F	20.	KA 225 S	20.	KA 225 RB	66.
LAL, LHL	125-400	LA 400 F	29.	LA 400 S	29.	LA 400 R	150.
MAL, MHL	125-1000	MA 1000 F	52.	MA 1000 S	52.	MA 1000 R	196.
PAL	800-1600			PA 1600 S	493.		

INDUSTRIAL AND SPECIAL PURPOSE ENCLOSURE ONLY

Breaker Catalog Number Prefix	Ampere Rating	NEMA 12K With Knockouts		NEMA 12 Without Knockouts		NEMA 4 & 5 Stainless Steel	
		Enclosure Only	Price	Enclosure Only	Price	Enclosure Only	Price
FAL, FHL	15-50	FA 100 A	\$ 28.	FA 100 AWK	\$ 28.	FA 100 DSE	\$128.
	60-100					FA 100 DSH	128.
KAL, KHL	70-225	KA 225 A	45.	KA 225 AWK	45.	KA 225 DS	259.
LAL, LHL	125-400	LA 400 A	80.	LA 400 AWK	80.	LA 400 DS	505.
MAL, MHL	125-800			MA 800 AWK	150.	MA 800 DS	900.

SPECIAL PURPOSE ENCLOSURE ONLY

Breaker Catalog Number Prefix	Ampere Ratings	NEMA 4 & 5 Cast Enclosure		NEMA 9 Class II, Group E, F, G		NEMA 7 Class I, Group D	
		Enclosure Only	Price	Enclosure Only	Price	Enclosure Only	Price
FAL, FHL	15-50	FA 050 D	\$104.	FA 050 Y	\$104.	FA 050 X	\$120.
	60-100	FA 100 D	128.	FA 100 Y	128.	FA 100 X	164.
KAL, KHL	70-225	KA 225 D	259.	KA 225 Y	259.	KA 225 X	348.
LAL, LHL	125-400	LA 400 D	505.	LA 400 Y	505.	LA 400 X	758.
	125-600	MA 600 D	810.	MA 600 Y	810.	MA 600 X	1060.
MAL, MHL	700-800	MA 800 D	900.	MA 800 Y	900.	MA 800 X	1294.

INSULATED GROUNDABLE NEUTRAL

ORDER SEPARATELY

Breaker Catalog Number Prefix	Amp. Rating	Terminal Lugs	Catalog Number			
			Steel Encl.	Price	Cast Encl.	Price
FAL, FHL	100	One #14 — #1-0 Cu or Al	100 SN	\$ 6.40	100 SNA	\$14.
KAL, KHL	225	One #6 — 300 MCM Cu or Al	225 SN	19.00	225 SNA	19.
LAL, LHL	400	Two #2:0 — 500 MCM Cu or Al	400 SN	23.00	400 SNA	31.
MAL, MHL	600	Two #3:0-600 MCM or Four #3:0-250 MCM Cu or Al	600 SN*	25.00		
MAL, MHL	800	Three #2:0 — 500 MCM Cu or Al	800 SN*	32.00		
MAL, MHL	1000	Three #2:0 — 600 MCM Cu or Al	1000 SN	49.00		
PAL	1600	Five 3:0-750 MCM Cu — Five 250-750 MCM Al	1600 SN	58.00		

*Use Al -800-SV on steel NEMA 12 and 4 & 5 enclosures only. Price \$32. list each.



SCHEDULE A DISCOUNT

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ENCLOSED CIRCUIT BREAKERS

COMPLETE UNIT DEVICES WILL BE SHIPPED SEPARATELY AS AN ENCLOSURE ONLY AND UNIT BREAKER UNLESS OTHERWISE SPECIFIED. Insulated groundable neutrals, if required, must be ordered separately for all frame sizes except the E frame.

System	Ampere Rating	Basic Catalog Number	NEMA 1 Surface Mount	NEMA 1 Flush Mount	NEMA 3R Raintight	NEMA 12K With Knockouts	NEMA 12 Without Knockouts	NEMA 4 & 5 Stainless Steel	NEMA 4 & 5 Cast Enclosure	NEMA 9 • Class II Group E, F, G	NEMA 7 • Class I Group D
		Add Suffix ➤	S	F	RB▲	A	AWK	DS	D	Y	X




A1

E FRAME — 100 AMPS. MAX. 240 V. AC — PERMANENT TRIP

 2 WIRE S/N 120 V. AC 125 V. DC	15	A1E 115	\$ 29.40	\$ 29.40	\$ 58.40						
	20	A1E 120	29.40	29.40	58.40						
	30	A1E 130	29.40	29.40	58.40						
	40	A1E 140	29.40	29.40	58.40						
	50	A1E 150	29.40	29.40	58.40						
 3 WIRE S/N 240 V. AC 125/250 V. DC	15	A1E 215	50.00	50.00	79.00						
	20	A1E 220	50.00	50.00	79.00						
	30	A1E 230	50.00	50.00	79.00						
	40	A1E 240	50.00	50.00	79.00						
	50	A1E 250	50.00	50.00	79.00						
	60	A1E 260	50.00	50.00	79.00						
	70	A1E 270	71.00	71.00	100.00						
	90	A1E 290	71.00	71.00	100.00						
	100	A1E 2100	71.00	71.00	100.00						
	Non-Auto	A1E 2000	50.00	50.00	79.00						
 4 WIRE S/N 240 V. AC	15	A1E 315	65.00	65.00	94.00						
	20	A1E 320	65.00	65.00	94.00						
	30	A1E 330	65.00	65.00	94.00						
	40	A1E 340	65.00	65.00	94.00						
	50	A1E 350	65.00	65.00	94.00						
	60	A1E 360	65.00	65.00	94.00						
	70	A1E 370	88.00	88.00	117.00						
	90	A1E 390	88.00	88.00	117.00						
	100	A1E 3100	88.00	88.00	117.00						
	Non-Auto	A1E 3000	65.00	65.00	94.00						




FA

100 AMPERE FRAME — 100 AMPS. MAX. 240 V. AC — PERMANENT TRIP

 1 POLE 120 V. AC 125 V. DC	15	FAE 12015	\$ 37.40	\$ 37.40	\$ 66.40	\$ 49.40	\$49.40	\$149.40	\$125.40	\$125.40	\$141.40
	20	FAE 12020	37.40	37.40	66.40	49.40	49.40	149.40	125.40	125.40	141.40
	30	FAE 12030	37.40	37.40	66.40	49.40	49.40	149.40	125.40	125.40	141.40
	40	FAE 12040	37.40	37.40	66.40	49.40	49.40	149.40	125.40	125.40	141.40
	50	FAE 12050	37.40	37.40	66.40	49.40	49.40	149.40	125.40	125.40	141.40
 2 POLE 240 V. AC 125/250 V. DC	15	FAE 22015	50.00	50.00	79.00	62.00	62.00	162.00	138.00	138.00	154.00
	20	FAE 22020	50.00	50.00	79.00	62.00	62.00	162.00	138.00	138.00	154.00
	30	FAE 22030	50.00	50.00	79.00	62.00	62.00	162.00	138.00	138.00	154.00
	40	FAE 22040	50.00	50.00	79.00	62.00	62.00	162.00	138.00	138.00	154.00
	50	FAE 22050	50.00	50.00	79.00	62.00	62.00	162.00	138.00	138.00	154.00
	60	FAE 22060	50.00	50.00	79.00	62.00	62.00	162.00	138.00	138.00	154.00
	70	FAE 22070	71.00	71.00	100.00	83.00	83.00	183.00	183.00	183.00	198.00
	90	FAE 22090	71.00	71.00	100.00	83.00	83.00	183.00	183.00	183.00	219.00
	100	FAE 22100	71.00	71.00	100.00	83.00	83.00	183.00	183.00	183.00	219.00
	Non-Auto	FAE 22000	50.00	50.00	79.00	62.00	62.00	162.00	138.00	138.00	154.00
 3 POLE 240 V. AC	15	FAE 32015	65.00	65.00	94.00	77.00	77.00	177.00	153.00	153.00	169.00
	20	FAE 32020	65.00	65.00	94.00	77.00	77.00	177.00	153.00	153.00	169.00
	30	FAE 32030	65.00	65.00	94.00	77.00	77.00	177.00	153.00	153.00	169.00
	40	FAE 32040	65.00	65.00	94.00	77.00	77.00	177.00	153.00	153.00	169.00
	50	FAE 32050	65.00	65.00	94.00	77.00	77.00	177.00	153.00	153.00	169.00
	60	FAE 32060	65.00	65.00	94.00	77.00	77.00	177.00	153.00	153.00	169.00
	70	FAE 32070	88.00	88.00	117.00	100.00	100.00	200.00	200.00	200.00	236.00
	90	FAE 32090	88.00	88.00	117.00	100.00	100.00	200.00	200.00	200.00	236.00
	100	FAE 32100	88.00	88.00	117.00	100.00	100.00	200.00	200.00	200.00	236.00
	Non-Auto	FAE 32000	65.00	65.00	94.00	77.00	77.00	177.00	153.00	153.00	169.00

FA

100 AMPERE FRAME — 100 AMPS. MAX. 480 V. AC — PERMANENT TRIP

 1 POLE 277 V. AC	15	FAE 14015	\$ 42.00	\$ 42.00	\$ 71.00	\$ 54.00	\$ 54.00	\$154.00	\$130.00	\$130.00	\$146.00
	20	FAE 14020	42.00	42.00	71.00	54.00	54.00	154.00	130.00	130.00	146.00
	30	FAE 14030	42.00	42.00	71.00	54.00	54.00	154.00	130.00	130.00	146.00
	40	FAE 14040	42.00	42.00	71.00	54.00	54.00	154.00	130.00	130.00	146.00
	50	FAE 14050	42.00	42.00	71.00	54.00	54.00	154.00	130.00	130.00	146.00
 2 POLE 480 V. AC 250 V. DC	15	FAE 24015	78.00	78.00	107.00	90.00	90.00	190.00	166.00	166.00	182.00
	20	FAE 24020	78.00	78.00	107.00	90.00	90.00	190.00	166.00	166.00	182.00
	30	FAE 24030	78.00	78.00	107.00	90.00	90.00	190.00	166.00	166.00	182.00
	40	FAE 24040	78.00	78.00	107.00	90.00	90.00	190.00	166.00	166.00	182.00
	50	FAE 24050	78.00	78.00	107.00	90.00	90.00	190.00	166.00	166.00	182.00
	60	FAE 24060	78.00	78.00	107.00	90.00	90.00	190.00	166.00	166.00	182.00
	70	FAE 24070	95.00	95.00	124.00	107.00	107.00	207.00	207.00	207.00	243.00
	90	FAE 24090	95.00	95.00	124.00	107.00	107.00	207.00	207.00	207.00	243.00
	100	FAE 24100	95.00	95.00	124.00	107.00	107.00	207.00	207.00	207.00	243.00
	Non-Auto	FAE 24000	71.00	71.00	100.00	83.00	83.00	183.00	183.00	183.00	219.00
 3 POLE 480 V. AC	15	FAE 34015	95.00	95.00	124.00	107.00	107.00	207.00	183.00	183.00	199.00
	20	FAE 34020	95.00	95.00	124.00	107.00	107.00	207.00	183.00	183.00	199.00
	30	FAE 34030	95.00	95.00	124.00	107.00	107.00	207.00	183.00	183.00	199.00
	40	FAE 34040	95.00	95.00	124.00	107.00	107.00	207.00	183.00	183.00	199.00
	50	FAE 34050	95.00	95.00	124.00	107.00	107.00	207.00	183.00	183.00	199.00
	60	FAE 34060	95.00	95.00	124.00	107.00	107.00	207.00	183.00	183.00	199.00
	70	FAE 34070	110.00	110.00	139.00	122.00	122.00	222.00	222.00	222.00	258.00
	90	FAE 34090	110.00	110.00	139.00	122.00	122.00	222.00	222.00	222.00	258.00
	100	FAE 34100	110.00	110.00	139.00	122.00	122.00	222.00	222.00	222.00	258.00
	Non-Auto	FAE 34000	88.00	88.00	117.00	100.00	100.00	200.00	200.00	200.00	236.00

FOR I-75,000* DEVICES SUBSTITUTE "H" FOR "A" IN PREFIX OF COMPLETE UNIT CATALOG NUMBER. Refer to numerical listing for prices.

▲The RB raintight enclosures have a bolt-on closing cap factory installed. Order bolt-on hubs separately from the table on Page 15.

◆Cast Iron Enclosures. See Page 49 for Cast Aluminum.

●Not U/L listed.

‡60-100 Amp. single pole devices available on order.

*Trademark of Square D Company




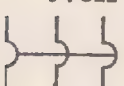
ENCLOSED CIRCUIT BREAKERS

COMPLETE UNIT DEVICES WILL BE SHIPPED SEPARATELY AS AN ENCLOSURE ONLY AND UNIT BREAKER UNLESS OTHERWISE SPECIFIED. Insulated groundable neutrals, if required, must be ordered separately for all frame sizes except the E frame.

System	Ampere Rating	Basic Catalog Number	NEMA 1 Surface Mount	NEMA 1 Flush Mount	NEMA 3R Rain-tight	NEMA 12K With Knockouts	NEMA 12 Without Knockouts	NEMA 4 & 5 Stainless Steel	NEMA 4 & 5 Cast Enclosure	NEMA 9 ♦ Class II Group F, G	NEMA 7 ♦ Class I Group D
		Add Suffix ➔	S	F	RBA	A	AWK	DS	D	Y	X



100 AMPERE FRAME — 100 AMPS. MAX. 600 V. AC PERMANENT TRIP

FA

	2 POLE	15	F AE 26015	\$ 88.	\$ 88.	\$ 117.	\$ 100.	\$ 100.	\$ 200.	\$176.	\$176.	\$192.
		20	F AE 26020	88.	88.	117.	100.	100.	200.	176.	176.	192.
		30	F AE 26030	88.	88.	117.	100.	100.	200.	176.	176.	192.
		40	F AE 26040	88.	88.	117.	100.	100.	200.	176.	176.	192.
		50	F AE 26050	88.	88.	117.	100.	100.	200.	176.	176.	192.
		60	F AE 26060	88.	88.	117.	100.	100.	200.	200.	200.	236.
		70	F AE 26070	107.	107.	136.	119.	119.	219.	219.	219.	255.
		90	F AE 26090	107.	107.	136.	119.	119.	219.	219.	219.	255.
		100	F AE 26100	107.	107.	136.	119.	119.	219.	219.	219.	255.
	Non-Auto		F AE 26000	88.	88.	117.	100.	100.	200.	200.	200.	236.
	3 POLE	15	F AE 36015	108.	108.	137.	120.	120.	220.	196.	196.	212.
		20	F AE 36020	108.	108.	137.	120.	120.	220.	196.	196.	212.
		30	F AE 36030	108.	108.	137.	120.	120.	220.	196.	196.	212.
		40	F AE 36040	108.	108.	137.	120.	120.	220.	196.	196.	212.
		50	F AE 36050	108.	108.	137.	120.	120.	220.	196.	196.	212.
		60	F AE 36060	108.	108.	137.	120.	120.	220.	196.	196.	212.
		70	F AE 36070	128.	128.	157.	140.	140.	240.	240.	240.	276.
		90	F AE 36090	128.	128.	157.	140.	140.	240.	240.	240.	276.
		100	F AE 36100	128.	128.	157.	140.	140.	240.	240.	240.	276.
	Non-Auto		F AE 36000	108.	108.	137.	120.	120.	220.	220.	220.	256.


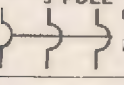
225 AMPERE FRAME — 225 AMPS. MAX. 600 V. AC PERMANENT TRIP

KA

	2 POLE	125	K AE 26125	223.	223.	269.	248.	248.	462.	462.	462.	551.
		150	K AE 26150	223.	223.	269.	248.	248.	462.	462.	462.	551.
		175	K AE 26175	223.	223.	269.	248.	248.	462.	462.	462.	551.
		200	K AE 26200	223.	223.	269.	248.	248.	462.	462.	462.	551.
		225	K AE 26225	223.	223.	269.	248.	248.	462.	462.	462.	551.
	Non-Auto		K AE 26000	183.	183.	229.	208.	208.	422.	422.	422.	511.
	3 POLE	125	K AE 36125	271.	271.	317.	296.	296.	510.	510.	510.	599.
		150	K AE 36150	271.	271.	317.	296.	296.	510.	510.	510.	599.
		175	K AE 36175	271.	271.	317.	296.	296.	510.	510.	510.	599.
		200	K AE 36200	271.	271.	317.	296.	296.	510.	510.	510.	599.
		225	K AE 36225	271.	271.	317.	296.	296.	510.	510.	510.	599.
	Non-Auto		K AE 36000	223.	223.	269.	248.	248.	462.	462.	462.	551.

400 AMPERE FRAME — 400 AMPS. MAX. 600 V. AC PERMANENT TRIP


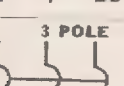
LA

	2 POLE	250	L AE 26250	387.	387.	508.	438.	438.	863.			
		300	L AE 26300	387.	387.	508.	438.	438.	863.			
		350	L AE 26350	387.	387.	508.	438.	438.	863.			
		400	L AE 26400	387.	387.	508.	438.	438.	863.			
	Non-Auto		L AE 26000	300.	300.	421.	351.	351.	776.			
	3 POLE	250	L AE 36250	464.	464.	585.	515.	515.	940.			
		300	L AE 36300	464.	464.	585.	515.	515.	940.			
		350	L AE 36350	464.	464.	585.	515.	515.	940.			
		400	L AE 36400	464.	464.	585.	515.	515.	940.			
	Non-Auto		L AE 36000	355.	355.	476.	406.	406.	831.			

Use Cast Aluminum
Enclosures Listed
on Digest Page 49.

1000 AMPERE FRAME — 1000 AMPS. MAX. 600 V. AC PERMANENT TRIP


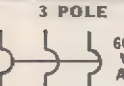
MA

	2 POLE	500	M AE 26500	650.	650.	794.		748.	1498.			
		600	M AE 26600	650.	650.	794.		748.	1498.			
		700	M AE 26700	832.	832.	976.		930.	1680.			
		800	M AE 26800	832.	832.	976.		930.	1680.			
		900	M AE 26900	1159.	1159.	1303.						
		1000	M AE 261000	1159.	1159.	1303.						
	3 POLE	500	M AE 36500	811.	811.	955.		626.	1376.			
		600	M AE 36600	811.	811.	955.		909.	1659.			
		700	M AE 36700	1054.	1054.	1198.		909.	1659.			
		800	M AE 36800	1054.	1054.	1198.		1152.	1902.			
		900	M AE 36900	1328.	1328.	1472.						
		1000	M AE 361000	1328.	1328.	1472.						
	Non-Auto		M AE 36000	633.	633.	777.		731.	1481.			

Use Cast Aluminum
Enclosures Listed
on Digest Page 49.

1600 AMPERE FRAME — 1600 AMPS. MAX. 600 V. AC

PA

	2 POLE	800	P AE 26800	1992.								
		1000	P AE 261000	1992.								
		1200	P AE 261200	2018.								
		1400	P AE 261400	2215.								
		1600	P AE 261600	2240.								
	3 POLE	800	P AE 36800	2368.								
		1000	P AE 361000	2368.								
		1200	P AE 361200	2406.								
		1400	P AE 361400	2639.								
		1600	P AE 361600	2677.								
	Non-Auto		P AE 360000	2368.								

FOR 1-75,000* DEVICES SUBSTITUTE "H" FOR "A" IN PREFIX OF COMPLETE UNIT CATALOG NUMBER. Refer to Numerical Listing for prices.
 ▲ FAE and KAE devices use bolt-on hubs and have suffix RB. For details and hub catalog numbers see Page 15.
 LAE and MAE devices have blank end walls and use suffix R.
 ♦ Cast Iron Enclosures. See Page 49 for cast aluminum. ♦ Not U/L listed.



*Trademark of Square D Company

SCHEDULE A DISCOUNT

PAGE 51

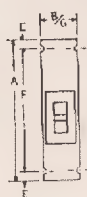
MOLDED CASE CIRCUIT BREAKERS

UNIT CIRCUIT BREAKER AND ENCLOSURE DIMENSIONS

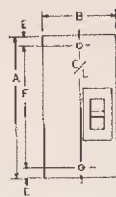
DIMENSIONS — UNIT CIRCUIT BREAKERS

Breaker Catalog Number Prefix	No. Poles	Fig. No.	Dimensions								B/G
			A	B	C	D	E	F	G	H	
FAL, FHL	1	1	6	3 1/2	4 1/2	4 1/2	1 1/2	5 1/2	1 1/2	1 1/2	1 1/2
FAL, FHL	2 & 3	3	6	4 1/2	3 1/2	4 1/2	1 1/2	5 1/2	1 1/2	1 1/2	1 1/2
Q2L, Q2LH	2	2	6 1/2	2 1/2	3 1/2	3 1/2	*	4 1/2	1 1/2	1 1/2	1 1/2
Q2L, Q2LH	3	3	6 1/2	4 1/2	3 1/2	3 1/2	*	4 1/2	1 1/2	1 1/2	1 1/2
KAL, KHL	2 & 3	3	8	4 1/2	3 1/2	4 1/2	1 1/2	7 1/2	1 1/2	1 1/2	1 1/2
LAL, LHL	2 & 3	3	11	5 1/2	4 1/2	5 1/2	1 1/2	9 1/2	2	1 1/2	1 1/2
MAL, MHL	2 & 3	3	14	8 1/2	4 1/2	6 1/2	1 1/2	10 1/2	3	1 1/2	1 1/2
PAL	2 & 3	3	20	13 1/2	8 1/2	10 1/2	1 1/2	14 1/2	3	1 1/2	1 1/2

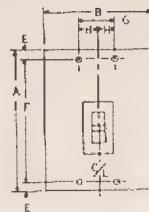
*Dimension E 1 1/2" at "ON" and 1/2" at "OFF" end.
All dimensions in inches.



1 Pole
Fig. 1



2 Pole
Fig. 2



2 and 3 Pole
Fig. 3

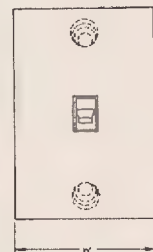


Side

DIMENSIONS — SERVICE ENTRANCE DEVICES

Breaker Catalog Number Prefix	Amps.	NEMA 1 Flush				NEMA 1 Surface				NEMA 3R			
		Enclosure Cat. No.	H	W	D	Enclosure Cat. No.	H	W	D	Enclosure Cat. No.	H	W	D
AIL	15-100	E 100 NF	13 1/2	9 1/2	3 1/2	E 100 NS	12 1/2	8 1/2	3 1/2	E 100 NRB	13 1/2	7 1/2	4 1/2
FAL, FHL	15-100	FA 100 F	15 1/2	9 1/2	4 1/2	FA 100 S	13 1/2	8 1/2	4 1/2	FA 100 RB	13 1/2	8 1/2	4 1/2
KAL, KHL	70-225	KA 225 F	20 1/2	13 1/2	5 1/2	KA 225 S	18 1/2	12 1/2	5 1/2	KA 225 RB	18 1/2	12 1/2	6 1/2
LAL, LHL	125-400	LA 400 F	28 1/2	18 1/2	6 1/2	LA 400 S	27	15 1/2	6 1/2	LA 400 R	27	15 1/2	7 1/2
MAL, MHL	125-1000	MA 1000 F	39 1/2	21 1/2	7 1/2	MA 1000 S	38 1/2	20 1/2	7 1/2	MA 1000 R	38	21	9 1/2
PAL	800-1600	.....	.....	.....	.....	PA 1600 S	62 1/2	32	18 1/2	.....	.....	.....	.....

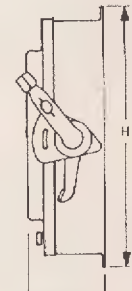
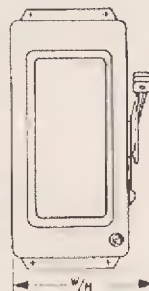
NOTES: Dimensions in inches. For dimensions and accessories not listed contact your local Square D Field Office.



DIMENSIONS — INDUSTRIAL AND SPECIAL PURPOSE DEVICES

Breaker Catalog Number Prefix	Amperes	NEMA 12 NEMA 12K			NEMA 4 & 5 Stainless Steel		
		H	W	D	H	W	D
FAL, FHL	15-50	16 1/2	7 1/4	5	16 1/2	7 1/4	5
FAL, FHL	60-100	16 1/2	7 1/4	5	16 1/2	7 1/4	5
KAL, KHL	70-225	20 3/8	10 1/8	6 3/8	20 3/8	10 1/8	6 3/8
LAL, LHL	125-400	29 1/8	13 3/4	8 1/2	29 1/8	13 3/4	8 1/2
MAL, MHL	125-800	36 3/8	20 1/2	9 3/8	36 3/8	20 1/2	9 3/8

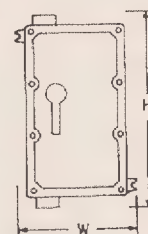
NOTES: Dimensions in inches. For dimensions and accessories not listed, contact your local Square D Field Office.



DIMENSIONS — SPECIAL PURPOSE DEVICES

Breaker Catalog Number Prefix	Amperes	Cast Aluminum						Cast Iron					
		NEMA 4 & 5, 9			NEMA 7			NEMA 4 & 5, 9			NEMA 7		
		H	W	D	H	W	D	H	W	D	H	W	D
FAL, FAH	15-50	13 1/2	9 1/2	6 1/2	12 1/2	9 1/2	7	12 1/2	9 1/2	5 1/2	12 1/2	9 1/2	5 1/2
FAL, FAH	60-100	15 1/2	9 1/2	6 1/2	15 1/2	9 1/2	6 1/2	15 1/2	10	6 1/2	15 1/2	10	6 1/2
KAL, KHL	70-225	21 1/2	10 1/2	7 1/2	22 1/2	10 1/2	7 3/4	25 1/2	16 1/2	8 1/4	25 1/2	16 1/2	8 1/4
LAL, LHL	125-400	26 1/2	16 3/4	12 1/2	26 3/4	16	12 3/4	.....	.....	.....	.....	.....	.....
MAL, MHL	125-600	38 1/2	16 3/4	12 1/2	35	20 1/2	12 1/2	.....	.....	.....	.....	.....	.....
MAL, MHL	700-800	44 1/2	16 3/4	12 1/2	43	20 1/2	12 1/2	.....	.....	.....	.....	.....	.....

NOTES: Dimensions in inches. For dimensions and accessories not listed, contact your local Square D Field Office.



CAST ENCLOSURE DRILLINGS

Circuit Breaker Catalog Number Prefix	Ampere Rating	Cast Aluminum		Cast Iron	
		Top and Bottom		Top	Bottom
FAL, FHL	15-50	1-1 1/4	1-2	1-1 1/4	2-1 1/4
FAL, FHL	60-100	1-2	1-2	1-2	2-2
KAL, KHL	70-225	1-2 1/2	1-2 1/2	1-2 1/2	2-2 1/2
LAL, LHL	125-400	1-3 1/2	1-3 1/2	1-3 1/2	2-3 1/2
MAL, MHL	125-600	3-3	3-3	3-3	3-3
MAL, MHL	700-800	2-3 1/2	2-3 1/2	2-3 1/2	2-3 1/2



NEMA 7
Cast Iron



POWER-ZONE® DRY TYPE TRANSFORMERS

DRY-TYPE GENERAL PURPOSE TRANSFORMERS

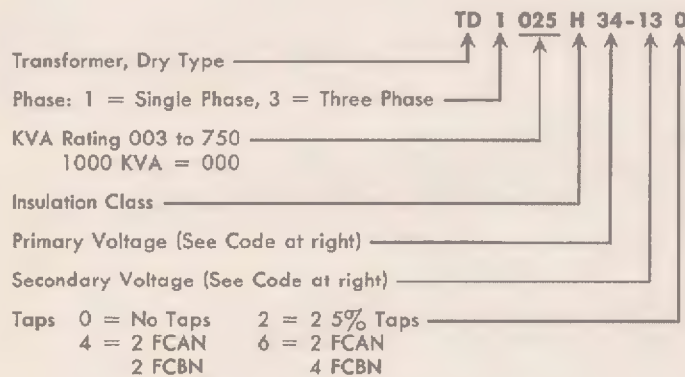
Single-Phase and Three-Phase

RATED LINE CURRENT AT RATED KVA

Single Phase					Three Phase				
KVA	120V.	240V.	480V.	600V.	KVA	208V.	240V.	480V.	600V.
3	25	12.5	6.25	5.0	3	8.34	7.23	3.61	2.89
5	41.7	20.8	10.4	8.33	6	16.6	14.4	7.20	5.80
7½	62.5	31.3	15.6	12.5	9	25.0	21.7	10.8	8.67
10	83.3	41.7	20.8	16.7	15	41.7	36.1	18.1	14.5
15	125	62.5	31.3	25.0	30	83.4	72.3	36.1	28.9
25	208	104	52.1	41.7	45	125	108	54.2	43.4
37½	313	156	78	62.5	75	208	181	90.3	72.3
50	417	208	104	83.3	112½	313	271	135	108
75	625	313	156	125	150	417	361	181	145
100	833	417	208	167	225	625	542	271	217
167	1392	696	348	278	360	834	723	361	289
200	1667	833	417	333	400	1112	963	482	385
250	2083	1042	521	417	500	1390	1204	602	482
333	2775	1388	694	555	750	2084	1806	903	723
					1000	2779	2408	1204	963

CATALOG NUMBER SYSTEM

Catalog Numbers for POWER-ZONE Dry Type Transformers have been revised for easier identification. Meaning of the new number system is diagrammed below.



Voltage Code

- 1 = 120
- 2 = 208
- 3 = 240
- 4 = 480
- 6 = 600
- 8 = 2400
- 9 = 4160

SAMPLE:

(4-21 = 480-208/120)

Tap Voltages: POWER-ZONE transformers are provided full capacity with primary taps above and/or below nominal voltage. The transformer temperature rise will not be exceeded when operating within 5% of the rated tap voltage at full rated KVA load.

TAP SELECTOR CHART

Tap	% Line Voltage	Rated Volts			
		120	240	480	600
+5%	105	126	252	504	630
+2½%	102.5	123	246	492	615
Rated	100	120	240	480	600
-2½%	97.5	117	234	468	585
-5%	95	114	228	456	570
-7.5%	92.5	111	222	444	555
-10%	90	108	216	432	540

These are calculated voltages based on the percentage indicated. Actual transformer input voltages may vary slightly.



POWER-ZONE® DRY TYPE TRANSFORMERS

SINGLE PHASE 600 VOLTS AND BELOW

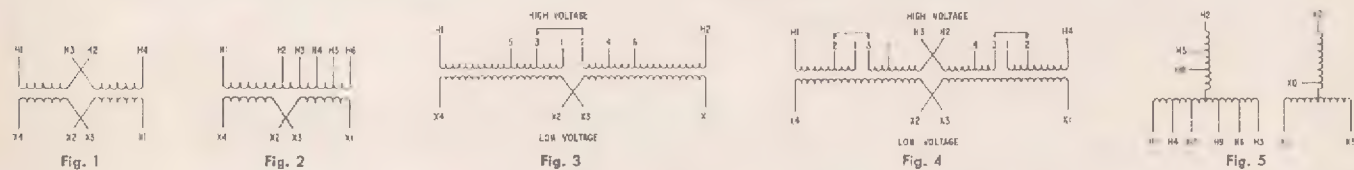
General purpose dry-type transformers for indoor and outdoor installations. Core and coil assemblies are mounted on rubber isolation pads to reduce the sound level. Tested according to NEMA and meets USASI standards. Compact size permits installations near the load being supplied.

SINGLE-PHASE TRANSFORMERS

Mounting	Wall	Wall	Cabinet	Wall	Cabinet
Insulation	Class H	Class H	Class H	Class H	Class H
HI Volts	240/480	480	240/480	600	600
LO Volts	120/240	120/240	120/240	120/240	120/240
Taps	None	4-2½%	6-2½%	4-2½%	4-2½%

Capacity KVA	Catalog No.	Price	Catalog No.	Price	Catalog No.	Price	Catalog No.	Price	Catalog No.	Price
3.	TD1003H34-130	\$104.	TD1003H4-134	\$112.			TD1003H6-134	\$118.		
5.	TD1005H34-130	150.	TD1005H4-134	160.			TD1005H6-134	168.		
7.5	TD1007H34-130	208.	TD1007H4-134	222.			TD1007H6-134	233.		
10.	TD1010H34-130	260.	TD1010H4-134	276.			TD1010H6-134	290.		
15.	TD1015H34-130	360.	TD1015H4-134	368.			TD1015H6-134	386.		
25.	TD1025H34-130	550.	TD1025H4-134	560.	TD1025H34-136	\$ 580.			TD1025H6-134	\$ 609.
37.5					TD1037H34-136	720.			TD1037H6-134	735.
50.					TD1050H34-136	870.			TD1050H6-134	914.
75.					TD1075H34-136	1090.			TD1075H6-134	1145.
100.					TD1100H34-136	1300.			TD1100H6-134	1365.
167.					TD1167H34-136	2570.			TD1167H6-134	2570.
200.					TD1200H34-136	2934.			TD1200H6-134	2934.
250.					TD1250H34-136	3550.			TD1250H6-134	3550.
333.					TD1333H34-136	4370.			TD1333H6-134	4370.

WIRING DIAGRAMS



KVA	Catalog No.	Dimensions in Inches								Wiring Dia.	Dia.	Wgt.
3.	TD1003H34-130	12½	10½	6½	6½	5½	8½	6¼	¾x11/16	Fig. 1	A	42
5.	TD1005H34-130	13¼	12½	7½	7½	6½	10½	6¼	¾x11/16	Fig. 1	A	73
7.5	TD1007H34-130	14¾	12½	7½	7½	6½	10½	6¼	¾x11/16	Fig. 1	A	94
10.	TD1010H34-130	15¾	12½	7½	7½	6½	10½	6¼	¾x11/16	Fig. 1	A	122
15.	TD1015H34-130	16½	14¾	10½	11½	6½	13	7¾	¾x13/16	Fig. 1	A	180
25.	TD1025H34-130	19½	14¾	10½	11½	6½	13	7¾	¾x13/16	Fig. 1	A	275
3.	TD1003H4-134	12½	10½	6½	6½	5½	8½	6¼	¾x11/16	Fig. 2	A	42
5.	TD1005H4-134	13¼	12½	7½	7½	6½	10½	6¼	¾x11/16	Fig. 2	A	73
7.5	TD1007H4-134	14¾	12½	7½	7½	6½	10½	6¼	¾x11/16	Fig. 2	A	94
10.	TD1010H4-134	15¾	12½	7½	7½	6½	10½	6¼	¾x11/16	Fig. 2	A	122
15.	TD1015H4-134	16½	14¾	10½	11½	6½	13	7¾	¾x13/16	Fig. 2	A	180
25.	TD1025H4-134	19½	14¾	10½	11½	6½	13	7¾	¾x13/16	Fig. 2	A	275
25.	TD1025H34-136	28¾	18½	20½	18½	14¾	13	12	¾	Fig. 4	D	280
37.5	TD1037H34-136	28¾	18½	20½	18½	14¾	13	12	¾	Fig. 4	D	340
50.	TD1050H34-136	28¾	18½	20½	18½	14¾	13	12	¾	Fig. 4	D	450
75.	TD1075H34-136	38¾	21½	22¾	20¾	17¾	13	12	¾	Fig. 4	D	550
100.	TD1100H34-136	38¾	21½	22¾	20¾	17¾	13	12	¾	Fig. 4	C	660
167.	TD1167H34-136	49	32	30½	27¾	24½	25	10	¾	Fig. 4	C	1100
200.	TD1200H34-136	49	32	30½	27¾	24½	25	10	¾	Fig. 4	C	1200
250.	TD1250H34-136	54	35¼	30½	27¾	26¾	25	10	¾	Fig. 4	C	1420
333.	TD1333H34-136	54	35¼	30½	27¾	26¾	25	10	¾	Fig. 4	C	1800
3.	TD1003H6-134	12½	10½	6½	6½	5½	8½	6¼	¾x11/16	Fig. 2	A	42
5.	TD1005H6-134	13¼	12½	7½	7½	6½	10½	6¼	¾x11/16	Fig. 2	A	73
7.5	TD1007H6-134	14¾	12½	7½	7½	6½	10½	6¼	¾x11/16	Fig. 2	A	94
10.	TD1010H6-134	15¾	12½	7½	7½	6½	10½	6¼	¾x11/16	Fig. 2	A	122
15.	TD1015H6-134	16½	14¾	10½	11½	6½	13	7¾	¾x13/16	Fig. 2	A	180
25.	TD1025H6-134	28¾	18½	20½	18½	14¾	13	12	¾	Fig. 3	D	280
37.5	TD1037H6-134	28¾	18½	20½	18½	14¾	13	12	¾	Fig. 3	D	340
50.	TD1050H6-134	28¾	18½	20½	18½	14¾	13	12	¾	Fig. 3	D	450
75.	TD1075H6-134	38¾	21½	22¾	20¾	17¾	13	12	¾	Fig. 3	B	550
100.	TD1100H6-134	38¾	21½	22¾	20¾	17¾	13	12	¾	Fig. 3	C	660
167.	TD1167H6-134	49	32	30½	27¾	24½	25	10	¾	Fig. 3	C	1100
200.	TD1200H6-134	49	32	30½	27¾	24½	25	10	¾	Fig. 3	C	1200
250.	TD1250H6-134	54	35¼	30½	27¾	26¾	25	10	¾	Fig. 3	C	1420
333.	TD1333H6-134	54	35¼	30½	27¾	26¾	25	10	¾	Fig. 3	C	1800

Dimensions not certified for construction. Consult Factory for certified data.

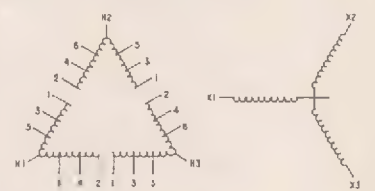


Fig. 6



Fig. 7

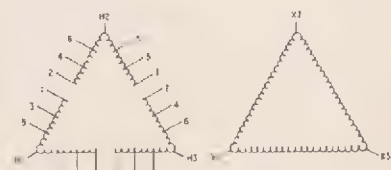


Fig. 8



POWER-ZONE® DRY TYPE TRANSFORMERS

THREE PHASE 600 VOLTS AND BELOW

POWER-ZONE transformers are detailed in catalog section 6190. Other ratings not shown are available upon request. Protective finish of zinc chromate and two coats of blue-gray enamel provide maximum corrosion resistance.

THREE-PHASE TRANSFORMERS

Mounting	Wall	Wall	Cabinet	Cabinet	Cabinet
Insulation	Class H	Class H	Class H	Class H	Class H
HI Volts	480 TEE	480 TEE	480 DELTA	480 DELTA	600 DELTA
LO Volts	208Y/120	240 TEE	240 DELTA	208Y/120	208Y/120
Taps	2-5%	2-5%	6-2½%	6-2½%	6-2½%

Capacity KVA	Catalog No.	Price	Catalog No.	Price	Catalog No.	Price	Catalog No.	Price	Catalog No.	Price
3	TD3003H4-212	\$200.	TD3003H4-32	\$240.						
6	TD3006H4-212	244.	TD3006H4-32	290.						
9	TD3009H4-212	330.	TD3009H4-32	360.						
15	TD3015H4-212	510.	TD3015H4-32	520.						
30					TD3030H4-36	\$ 740.	TD3030H4-216	\$ 740.	TD3030H6-16	\$ 777.
45					TD3045H4-36	1030.	TD3045H4-216	1030.	TD3045H6-16	1082.
75					TD3075H4-36	1590.	TD3075H4-216	1600.	TD3075H6-16	1680.
112.5					TD3112H4-36	2200.	TD3112H4-216	2000.	TD3112H6-16	2100.
150					TD3150H4-36	2700.	TD3150H4-216	2430.	TD3150H6-216	2552.
225					TD3225H4-36	3390.	TD3225H4-216	3070.	TD3225H6-216	3224.
300					TD3300H4-36	3980.	TD3300H4-216	3800.	TD3300H6-216	3990.
400					TD3400H4-36	5400.	TD3400H4-216	5350.	TD3400H6-216	5400.
500					TD3500H4-36	6640.	TD3500H4-216	6350.	TD3500H6-216	6500.
750					TD3750H4-36	8640.	TD3750H4-216	8500.	TD3750H6-216	8650.
1000					TD3000H4-36	11120.	TD3000H4-216	11000.	TD3000H6-216	11200.

DIMENSIONS

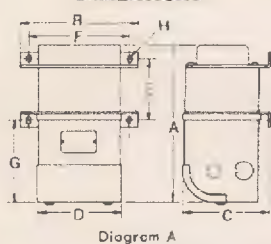


Diagram A

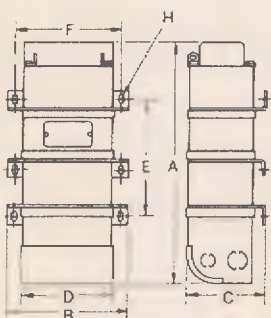


Diagram B

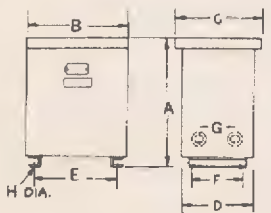


Diagram C & D

Diagram "D" Transformers have wall mounting brackets not shown.

Housing: Transformers have mounting brackets tied directly to the core so no strain is placed on wiring compartment. Transformers up through 75 KVA have wall mounting brackets included. Lifting holes are provided for easy handling. Detailed data sheets are available. Certified data sheets can be obtained at extra charge.

KVA	Catalog No.	Dimensions in Inches								Wiring Dia.	Dia.	Wgt.
3	TD3003H4-212	19 1/16	10 3/16	6 1/16	6 29/32	8 3/8	8 1/16	1 1/16 x 1 1/16	1 1/16 x 1 1/16	Fig. 5	B	72
6	TD3006H4-212	24 9/16	10 3/16	6 3/16	6 29/32	11 1/8	8 1/16	1 1/16 x 1 1/16	1 1/16 x 1 1/16	Fig. 5	B	125
9	TD3009H4-212	24 17/32	12 5/16	7 27/32	9 1/8	11 1/16	10 1/16	1 1/16 x 1 1/16	1 1/16 x 1 1/16	Fig. 5	B	200
15	TD3015H4-212	25 5/8	14 3/4	10 1/16	11 1/16	11 23/32	11 1/16	1 1/16 x 1 1/16	1 1/16 x 1 1/16	Fig. 5	B	305
30	TD3030H4-216	28 7/8	23 7/8	20 1/2	18 1/8	19 3/4	13	12	9/16	Fig. 6	D	340
45	TD3045H4-216	28 7/8	23 7/8	20 1/2	18 1/8	19 3/4	13	12	9/16	Fig. 6	D	450
75	TD3075H4-216	35 7/8	26 1/2	20 1/2	18 1/8	22 3/8	13	12	9/16	Fig. 6	D	670
112.5	TD3112H4-216	41 1/2	31 3/16	22 7/16	20 1/4	25 3/8	18	6	9/16	Fig. 6	C	1060
150	TD3150H4-216	41 7/8	32 3/16	23 3/16	21 7/16	25 3/8	19 1/8	6	9/16	Fig. 6	C	1200
225	TD3225H4-216	53 7/8	39 7/8	31 1/4	28 3/8	34 15/16	23	16	9/16	Fig. 6	C	1600
300	TD3300H4-216	53 7/8	39 7/8	31 1/4	28 3/8	34 15/16	23	16	9/16	Fig. 6	C	2100
400	TD3400H4-216	65	54	34 3/16	30	46	27	16	9/16	Fig. 6	C	2750
500	TD3500H4-216	65	54	34 3/16	30	46	27	16	9/16	Fig. 6	C	3200
750	TD3750H4-216	76 1/2	60 3/4	36 11/16	31 3/4	49 3/4	27	16	9/16	Fig. 6	C	4700
1000	TD3000H4-216	80	72	36 11/16	32	60	27	16	9/16	Fig. 6	C	6400
3	TD3003H4-32	19 1/16	10 3/16	6 1/16	6 29/32	8 3/8	8 1/16	1 1/16 x 1 1/16	1 1/16 x 1 1/16	Fig. 7	B	72
6	TD3006H4-32	24 9/16	10 3/16	6 3/16	6 29/32	11 1/8	8 1/16	1 1/16 x 1 1/16	1 1/16 x 1 1/16	Fig. 7	B	125
9	TD3009H4-32	24 17/32	12 5/16	7 27/32	9 1/8	11 1/16	10 1/16	1 1/16 x 1 1/16	1 1/16 x 1 1/16	Fig. 7	B	200
15	TD3015H4-32	25 5/8	14 3/4	10 1/16	11 1/16	11 23/32	11 1/16	1 1/16 x 1 1/16	1 1/16 x 1 1/16	Fig. 7	B	305
30	TD3030H4-36	28 7/8	23 7/8	20 1/2	18 1/8	19 3/4	13	12	9/16	Fig. 8	D	340
45	TD3045H4-36	28 7/8	23 7/8	20 1/2	18 1/8	19 3/4	13	12	9/16	Fig. 8	D	450
75	TD3075H4-36	35 7/8	26 1/2	20 1/2	18 1/8	22 3/8	13	12	9/16	Fig. 8	D	670
112.5	TD3112H4-36	41 1/2	31 3/16	22 7/16	20 1/4	25 3/8	18	6	9/16	Fig. 8	C	1060
150	TD3150H4-36	41 7/8	32 3/16	23 3/16	21 7/16	25 3/8	19 1/8	6	9/16	Fig. 8	C	1200
225	TD3225H4-36	53 7/8	39 7/8	31 1/4	28 3/8	34 15/16	23	16	9/16	Fig. 8	C	1600
300	TD3300H4-36	53 7/8	39 7/8	31 1/4	28 3/8	34 15/16	23	16	9/16	Fig. 8	C	2100
400	TD3400H4-36	65	54	34 3/16	30	46	27	16	9/16	Fig. 8	C	2750
500	TD3500H4-36	65	54	34 3/16	30	46	27	16	9/16	Fig. 8	C	3200
750	TD3750H4-36	76 1/2	60 3/4	36 11/16	31 3/4	49 3/4	27	16	9/16	Fig. 8	C	4700
1000	TD3000H4-36	80	72	36 11/16	32	60	27	16	9/16	Fig. 8	C	6400
40	TD3030H6-216	28 7/8	23 7/8	20 1/2	18 1/8	19 3/4	13	12	9/16	Fig. 6	D	340
45	TD3045H6-216	28 7/8	23 7/8	20 1/2	18 1/8	19 3/4	13	12	9/16	Fig. 6	D	450
75	TD3075H6-216	35 7/8	26 1/2	20 1/2	18 1/8	22 3/8	13	12	9/16	Fig. 6	D	670
112.5	TD3112H6-216	41 1/2	31 3/16	22 7/16	20 1/4	25 3/8	18	6	9/16	Fig. 6	C	1060
150	TD3150H6-216	41 7/8	32 3/16	23 3/16	21 7/16	25 3/8	19 1/8	6	9/16	Fig. 6	C	1200
225	TD3225H6-216	53 7/8	39 7/8	31 1/4	28 3/8	34 15/16	23	16	9/16	Fig. 6	C	1600
300	TD3300H6-216	53 7/8	39 7/8	31 1/4	28 3/8	34 15/16	23	16	9/16	Fig. 6	C	2100
400	TD3400H6-216	65	54	34 3/16	30	46	27	16	9/16	Fig. 6	C	2750
500	TD3500H6-216	65	54	34 3/16	30	46	27	16	9/16	Fig. 6	C	3200
750	TD3750H6-216	76 1/2	60 3/4	36 11/16	31 3/4	49 3/4	27	16	9/16	Fig. 6	C	4700
1000	TD3000H6-216	80	72	36 11/16	32	60	27	16	9/16	Fig. 6	C	6400

Dimensions not certified for construction. Contact Factory for certified data.



LIGHTING & DISTRIBUTION PANELBOARDS

INDEX AND SELECTION

CIRCUIT BREAKER

(Circuit Breaker panelboards meet Federal Specification W-P-115a, Type I, Class 1.)

See Page 86 for Ordering Information

Panelboard Type	Service	Maximum Branch Ratings				Max. Mains Ratings		Box Size	Digest Page No.
		Rating	Branch	Frame	Connection	Lugs	Main Breaker or Switch		
NQO	120/208 V. AC 120/240 V. AC 240 V. AC	15-100 A. 1, 2, 3 Pole	QO Q1	70A 100A	Plug-On	400 A.	400 A.	14" W. x 4" D. 14" W. x 5 3/4" D. 20" W. x 5 3/4" D.	58, 59 60, 61
NQH		15-30 A. 1, 2, 3 Pole	QH	50A					61
NQO-LX Column Width	120/208 V. AC 120/240 V. AC 240 V. AC	15-70 A. 1, 2, 3 Pole	QO	70A	Plug-On	225 A.	100 A.	★6 7/8" W. x 5" D. 8 5/8" W. x 5" D.	58, 59, 62
NQOB	120/208 V. AC 120/240 V. AC 240 V. AC	15-100 A. 1, 2, 3 Pole	QOB Q1B	70A 100A	Bolt-On	600 A.	400 A.	★14" W. x 4" D. ★14" W. x 5 3/4" D. 20" W. x 5 3/4" D.	58, 59 64, 65
NQHB		15-30 A. 1, 2, 3 Pole	QHB	50A					65
NQOB-LX Column Width	120/208 V. AC 120/240 V. AC 240 V. AC	15-70 A. 1, 2, 3 Pole	QOB	70A	Bolt-On	225 A.	100 A.	★6 7/8" W. x 5" D. 8 5/8" W. x 5" D.	64
NA1B	120/208 V. AC 120/240 V. AC 240 V. AC 125/250 V. DC	15-100 A. 1, 2, 3 Pole	A1B	100A	Bolt-On	600 A.	400 A.	20" W. x 5 3/4" D.	66, 67
NA1B-LX Column Width	120/208 V. AC 120/240 V. AC 240 V. AC 125/250 V. DC	15-50 A. 1, 2, 3 Pole	A1B	100A	Bolt-On	225 A.	100 A.	8 5/8" W. x 5" D.	66
NH1B	277/480 V. AC 480 V. AC	15-100 A. 1, 2, 3 Pole	†FY FA	100A	Plug-On or Bolt-On	400 A.	400 A.	20" W. x 6 1/4" D.	68, 69
NH1B-LX Column Width	277/480 V. AC	15-50 A. 1, 2, 3 Pole	FA	100A	Bolt-On	225 A.	225 A.	8 5/8" W. x 5" D.	68
HCN		15-100 A. 1, 2, 3 Pole 125-225 A. 2, 3 Pole	FA †FY †Q2	100A 100A 225A		600 A.	400 A.	26" W. x 6 1/4" D.	72, 73 74, 75
HCM	125/250 V. AC-DC 250 V. AC-DC 120/208 V. AC 277/480 V. AC	15-100 A. 1, 2, 3 Pole 125-225 A. 2, 3 Pole	FA †FY †Q2 KA	100A 100A 225A 225A		800 A.	800 A.	32" W. x 8" D.	72, 73 74, 75
HCW	120/208 V. AC 277/480 V. AC 480 V. AC 600 V. AC	15-100 A. 1, 2, 3 Pole 125-400 A. 2, 3 Pole	FA †FY †Q2 KA LA	100A 100A 225A 225A 400A	Plug-On or Bolt-On	800 A.	800 A.	41" W. x 8" D.	72, 73 74, 75
HCWM		15-100 A. 1, 2, 3 Pole 125-800 A. 2, 3 Pole	FA †FY †Q2 KA LA MA	100A 100A 225A 225A 400A 800A		1200 A.		41" W. x 9 1/4" D.	72, 74, 75

FUSIBLE

(Fusible panelboards meet Federal Specification W-P-115a, Type II, Class 1.)

NTFB	120/208 V. AC 120/240 V. AC	15-20 A. 1, 2, 3 Pole	Tumbler Sw. Class G Cart. Fuse		Bolt-On	225 A.		★14" W. x 4" D. 20" W. x 5 3/4" D. ★14" W. x 5 3/4" D.	76
NTHB	277/480 V. AC	15-20 A. 1 Pole	Tumbler Sw. Class G Cart. Fuse		Bolt-On	225 A.		20" W. x 5 3/4" D.	76
QMB	120/208 V. AC 125/250 V. AC-DC 277/480 V. AC 250 V. AC-DC 600 V. AC	30-200 A. 2, 3 Pole 400, 600 A. 2, 3 Pole	Quick-Make Quick-Break Cart. Fuse		Plug-On Bolt-On	1200 A.	600 A.	31" W. x 10 5/8" D. 38" W. x 14 5/8" D.	78, 79 80, 81 82, 83

†Type Q2 has maximum 240 V. AC only rating.

‡Type FY has maximum 277 V. AC rating.

★Optional box sizes available at no additional cost on factory assembled panelboards.

NOTE: Complete Circuit Breaker interrupting capacity data is shown on Page 44.



CIRCUIT BREAKERS

FOR USE IN NQO & NQOB PANELBOARDS

TYPE QO® PLUG-ON AND QOB BOLT-ON with VISI-TRIP INDICATOR



1 Pole
120 V. AC



2 Pole
120/240 V. AC
or 240 V. AC



3 Pole
240 V. AC

PANELBOARD SPACE REQUIREMENTS

Number Poles	Spaces
1	1
2	2
3	3

TYPE Q1 PLUG-ON AND Q1B BOLT-ON



1 Pole
240 V. AC



2 Pole
120/240 V. AC
or 240 V. AC



3 Pole
240 V. AC

PANELBOARD SPACE REQUIREMENTS

Number Poles	Spaces
1	2
2	4
3	6

① Space requirements for panelboards with 225 amp. max. mains. In 400 and 600 ampere basic devices, Type Q1 and Q1B 1 pole breakers require 1 space, 2 pole Q1 and Q1B require 2 spaces and 3 pole Q1 and Q1B require 3 spaces.

5,000 AMPERES RMS — U.L. Listed Interrupting Capacity
Identification — Black Handle

5,000 A.I.C.

Amp. Rating	Single Pole 120/240 V. AC			Two Pole 120/240 V. AC			Two Pole 240 V. AC			Three Pole 240 V. AC		
	Plug-On Cat. No.	Bolt-On Cat. No.	Price	Plug-On Cat. No.	Bolt-On Cat. No.	Price	Plug-On Cat. No.	Bolt-On Cat. No.	Price	Plug-On Cat. No.	Bolt-On Cat. No.	Price
15	QO 115	QOB 115	\$ 3.30	QO 215	QOB 215	\$ 7.70	QO 215H	QOB 215H	\$16.10	QO 315	QOB 315	\$26.30
20	QO 120	QOB 120	3.30	QO 220	QOB 220	7.70	QO 220H	QOB 220H	16.10	QO 320	QOB 320	26.30
25	QO 125	QOB 125	3.30	QO 225	QOB 225	7.70	QO 225H	QOB 225H	16.10	QO 325	QOB 325	26.30
30	QO 130	QOB 130	3.30	QO 230	QOB 230	7.70	QO 230H	QOB 230H	16.10	QO 330	QOB 330	26.30
35	QO 135	QOB 135	3.30	QO 235	QOB 235	7.70	QO 235H	QOB 235H	16.10	QO 335	QOB 335	26.30
40	QO 140	QOB 140	3.30	QO 240	QOB 240	7.70	QO 240H	QOB 240H	16.10	QO 340	QOB 340	26.30
45	QO 145	QOB 145	3.30	QO 245	QOB 245	7.70	QO 245H	QOB 245H	16.10	QO 345	QOB 345	26.30
50	QO 150	QOB 150	3.30	QO 250	QOB 250	7.70	QO 250H	QOB 250H	16.10	QO 350	QOB 350	26.30
60				QO 260	QOB 260	7.70	QO 260H	QOB 260H	16.10	QO 360	QOB 360	26.30
70				QO 270	QOB 270	15.60	QO 270H	QOB 270H	21.10	QO 370	QOB 370	39.00
80							QO 280H	QOB 280H	21.10	QO 380	QOB 380	39.00
90							QO 290H	QOB 290H	21.10	QO 390	QOB 390	39.00
100							QO 2100H	QOB 2100H	21.10	QO 3100H	QOB 3100H	39.00

10,000 AMPERES RMS — U.L. Listed Interrupting Capacity
Identification — Green Handle

10,000 A.I.C.

Amp. Rating	Single Pole 120/240 V. AC			Two Pole 120/240 V. AC			Two Pole 240 V. AC			Three Pole 240 V. AC		
	Plug-On Cat. No.	Bolt-On Cat. No.	Price	Plug-On Cat. No.	Bolt-On Cat. No.	Price	Plug-On Cat. No.	Bolt-On Cat. No.	Price	Plug-On Cat. No.	Bolt-On Cat. No.	Price
15	QO 115H	QOB 115H	\$ 6.60	QO 215H	QOB 215H	\$16.10				QO 315H	QOB 315H	\$26.30
20	QO 120H	QOB 120H	6.60	QO 220H	QOB 220H	16.10				QO 320H	QOB 320H	26.30
25	QO 125H	QOB 125H	6.60	QO 225H	QOB 225H	16.10				QO 325H	QOB 325H	26.30
30	QO 130H	QOB 130H	6.60	QO 230H	QOB 230H	16.10				QO 330H	QOB 330H	26.30
35	QO 135H	QOB 135H	7.50	QO 235H	QOB 235H	16.10				QO 335H	QOB 335H	26.30
40	QO 140H	QOB 140H	7.50	QO 240H	QOB 240H	16.10				QO 340H	QOB 340H	26.30
45	QO 145H	QOB 145H	7.50	QO 245H	QOB 245H	16.10				QO 345H	QOB 345H	26.30
50	QO 150H	QOB 150H	7.50	QO 250H	QOB 250H	16.10				QO 350H	QOB 350H	26.30
60	QO 160H	QOB 160H	7.50	QO 260H	QOB 260H	16.10				QO 360H	QOB 360H	26.30
70	QO 170H	QOB 170H	9.50	QO 270H	QOB 270H	36.10				QO 370H	QOB 370H	39.00
80	QO 180H	QOB 180H	9.50	QO 280H	QOB 280H	36.10				QO 380H	QOB 380H	39.00
90	QO 190H	QOB 190H	9.50	QO 290H	QOB 290H	36.10				QO 390H	QOB 390H	39.00
100	QO 1100H	QOB 1100H	9.50	QO 2100H	QOB 2100H	36.10				QO 3100H	QOB 3100H	39.00

75,000 AMPERES RMS (Asym.), 65,000 Amperes RMS (Sym.) — U.L. Listed Interrupting Capacity
Identification — Gray Handle

75,000 A.I.C.

Amp. Rating	Single Pole 120/240 V. AC			Two Pole 120/240 V. AC			Two Pole 240 V. AC			Three Pole 240 V. AC		
	Plug-On Cat. No.	Bolt-On Cat. No.	Price	Plug-On Cat. No.	Bolt-On Cat. No.	Price	Plug-On Cat. No.	Bolt-On Cat. No.	Price	Plug-On Cat. No.	Bolt-On Cat. No.	Price
15	QH 115	QHB 115	\$12.30	QH 215	QHB 215	\$30.10				QH 315	QHB 315	\$53.00
20	QH 120	QHB 120	12.30	QH 220	QHB 220	30.10				QH 320	QHB 320	53.00
25	QH 125	QHB 125	12.30	QH 225	QHB 225	30.10				QH 325	QHB 325	53.00
30	QH 130	QHB 130	12.30	QH 230	QHB 230	30.10				QH 330	QHB 330	53.00

SWITCH NEUTRAL

5,000 A.I.C.

HIGH MAGNETIC

5,000 A.I.C.

2 Wire 120 V. AC 3 Wire 120/240 V. AC



Two Wire Switch Neutral

Amp. Rating	Plug-On Cat. No.	Bolt-On Cat. No.	Price
15	QO 215SWN	QOB 215SWN	\$10.40
20	QO 220SWN	QOB 220SWN	10.40
30	QO 230SWN	QOB 230SWN	10.40

Three Wire Switch Neutral

Amp. Rating	Plug-On Cat. No.	Bolt-On Cat. No.	Price
15	QO 315SWN	QOB 315SWN	\$15.30
20	QO 320SWN	QOB 320SWN	15.30
30	QO 330SWN	QOB 330SWN	15.30

High Magnetic



* Single Pole 120 V. AC

Amp. Rating	Plug-On Cat. No.	Bolt-On Cat. No.	Price
*15	QO 115HM	QOB 115HM	\$3.30
*20	QO 120HM	QOB 120HM	3.30

* High magnetic trip breakers are recommended for area lighting (athletic fields, parking lots, outdoor signs, etc.) when using tungsten filament lamps of inherent high inrush current and individual room dimmer applications.

◆ 15, 20, 25 and 30 ampere, two pole, 240 volt QO and QOB breakers and 35, 40, 45, 50, 60, 70, 80, 90 and 100 ampere, two pole Q1 and Q1B breakers are approved for use on 3Φ, grounded "B" Φ system.

● Q1 and Q1B breakers have 240 V. AC rating.

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SCHEDULE B DISCOUNT

PAGE 57

CIRCUIT BREAKER PANELBOARDS

TYPE
NQO
NQOB

UNASSEMBLED TYPE — Application Data and Dimensions

APPLICATION: For use on AC only. Meets Federal Specification W P 115a, Type 1, Class 1. Listed by Underwriters' Laboratories. (Federal Specification requires KA breaker be used for 225 A. main breaker.)

SERVICE: 120/240 Volts, 1 Ø 3 W., AC
 ♦ 3Ø, Grd. "B" Ø.
 240 Volts, 1 Ø 2 W. AC

MAINS: Distributed Phase Bussing

Type NQO

Main Lugs:

100 A. — #0 Al or Cu Wire
 225 A. — 300 MCM Al or Cu Wire
 400 A. — 2-500 MCM Al or Cu Wire

Main Breaker:

50 A. A1B #4 Al or Cu Wire
 100 A. A1B #0 Al or Cu Wire
 225 A. Q2 300 MCM Al or Cu Wire
 400 A. LA 2-250 MCM or 1-600 MCM Al or Cu Wire

BRANCHES: Plug-On QO and Q1 and Bolt-On QOB. Rated at 5000 A.I.C. AC. Meet Federal Specifications W-C-375a, Class 1a and 1b.

QO, 1, 2 and 3 Pole — 15-30 A. — #8 Al or #10 Cu Wire
 QO, 1, 2 and 3 Pole — 40-50 A. — #4 Al or #6 Cu Wire
 QO, 2 and 3 Pole — 60-70 A. — #2 Al or #4 Cu Wire
 QO, 2 and 3 Pole — 70-100 A. — #0 Al or Cu Wire

CABINETS: **MONO-FLAT[®]** Fronts with concealed trim clamps, door with concealed hinges and flush lock, gray baked enamel finish. Column width has screw cover fronts. Boxes — Galvanized steel with knockouts

DIMENSIONS:

Type NQO

1 PHASE 3 WIRE

	Basic Device Catalog No.	Box Dimensions			Minimum Gutters			
		H	W	D	Top	Bot.	R	L
STANDARD WIDTH	MAINS: LUGS ONLY							
	NQO-20-123	20 1/4	14	4				
	NQO-24-203-1	24 1/4	14	4				
	NQO-24-203-2	24 1/4	14	4				
	NQO-28-303	28	14	4	5	5	4	4
	NQO-32-423	32 1/2	14	4				
	NQO-37-543	37 1/4	14	4				
	NQO-38-303-4	38	20	5 1/4	8	8	4	4
	NQO-41-423-4	41	20	5 1/4				
	MAINS: CIRCUIT BREAKER — 2 POLE							
COL. WIDTH	NQO-24-123M	24 1/4	14	5 1/4				
	NQO-28-203M	28	14	5 1/4				
	NQO-37-303M	37 1/4	14	5 1/4	5	5	4	4
	NQO-42-423M	42 1/4	14	5 1/4				
	NQO-48-543M	48 1/4	14	5 1/4				
	NQO-50-303-4M	50	20	5 1/4	8	8	4	4
COL. WIDTH	NQO-53-423-4M	53	20	5 1/4				
	MAINS: LUGS ONLY							
	NQO-826-143	26 1/2	8 1/2	5				
	NQO-832-203	32 1/2	8 1/2	5	5	5		2 1/2
	NQO-840-303	40	8 1/2	5				
	NQO-849-423	49	8 1/2	5				
COL. WIDTH	MAINS: CIRCUIT BREAKER — 2 POLE							
	NQO-832-143M	32 1/2	8 1/2	5	5	5		2 1/2
	NQO-849-203M	40	8 1/2	5				

3 PHASE 4 WIRE

	Basic Device Catalog No.	Box Dimensions			Minimum Gutters			
		H	W	D	Top	Bot.	R	L
STANDARD WIDTH	MAINS: LUGS ONLY							
	NQO-20-124	20 1/4	14	4				
	NQO-24-204	24 1/4	14	4				
	NQO-28-304-1	28	14	4	5	5	4	4
	NQO-28-304-2	28	14	4				
	NQO-32-424	32 1/2	14	4				
	NQO-37-544	37 1/4	14	4				
	NQO-38-304-4	38	20	5 1/4	8	8	4	4
	NQO-41-424-4	41	20	5 1/4				
	MAINS: CIRCUIT BREAKER — 3 POLE							
COL. WIDTH	NQO-24-124M	24 1/4	14	5 1/4				
	NQO-28-204M	28	14	5 1/4				
	NQO-32-304M	32 1/2	14	5 1/4	5	5	4	4
	NQO-42-424M	42 1/4	14	5 1/4				
	NQO-48-544M	48 1/4	14	5 1/4				
	NQO-50-304-4M	50	20	5 1/4	8	8	4	4
COL. WIDTH	NQO-53-424-4M	53	20	5 1/4				
	MAINS: LUGS ONLY							
	NQO-826-144	26 1/2	8 1/2	5				
	NQO-832-204	32 1/2	8 1/2	5	5	5		2 1/2
	NQO-840-304	40	8 1/2	5				
	NQO-849-424	49	8 1/2	5				
COL. WIDTH	MAINS: CIRCUIT BREAKER — 3 POLE							
	NQO-832-144M	32 1/2	8 1/2	5				
	NQO-840-204M	40	8 1/2	5	5	5		2 1/2
	NQO-845-304M	45	8 1/2	5				

♦ For 10" WF beams.

▲ Q1 breakers cannot be mounted in column width panelboards.

Type NQOB

Main Lugs:

100 A. — #0 Al or Cu Wire
 225 A. — 300 MCM Al or Cu Wire

Main Breaker:

50 A. A1B #4 Al or Cu Wire
 100 A. A1B #0 Al or Cu Wire
 225 A. Q2 300 MCM Al or Cu Wire

QOB — 15-30 A., 1, 2 and 3 Pole — #8 Al or #10 Cu Wire

QOB — 40-50 A., 1, 2 and 3 Pole — #4 Al or #6 Cu Wire

QOB — 60-70 A., 2 and 3 Pole — #2 Al or #4 Cu Wire



Type NQOB

	Basic Device Catalog No.	Box Dimensions			Minimum Gutters			
		H	W	D	Top	Bot.	R	L
STANDARD WIDTH	MAINS: LUGS ONLY							
	NQOB-23-123	23	20	5 1/4				
	NQOB-26-203-1	26	20	5 1/4				
	NQOB-26-203-2	26	20	5 1/4	5	5	6 1/2	6 1/2
	NQOB-29-303	29	20	5 1/4				
	NQOB-35-423	35	20	5 1/4				
COL. WIDTH	MAINS: CIRCUIT BREAKER — 2 POLE							
	NQOB-23-123M	23	20	5 1/4				
	NQOB-26-203-1M	26	20	5 1/4				
	NQOB-29-303M	29	20	5 1/4	5	5	6 1/2	6 1/2
	NQOB-35-423M	35	20	5 1/4				
	NQOB-44-423M	44	20	5 1/4				

Column Width Type NQOB panelboards are available factory assembled only. Consult Distribution Equipment Catalog, Section 1620, for catalog numbers and dimensions.

	Basic Device Catalog No.	Box Dimensions			Minimum Gutters			
		H	W	D	Top	Bot.	R	L
STANDARD WIDTH	MAINS: LUGS ONLY							
	NQOB-23-124	23	20	5 1/4				
	NQOB-26-204	26	20	5 1/4				
	NQOB-29-304-1	29	20	5 1/4	5	5	6 1/2	6 1/2
	NQOB-29-304-2	29	20	5 1/4				
	NQOB-35-424	35	20	5 1/4				
COL. WIDTH	MAINS: CIRCUIT BREAKER — 3 POLE							
	NQOB-26-144M	26	20	5 1/4				
	NQOB-29-244M	29	20	5 1/4				
	NQOB-35-304M	35	20	5 1/4	5	5	6 1/2	6 1/2
	NQOB-44-424M	44	20	5 1/4				

♦ 15, 20, 25 and 30 ampere, two pole, 240 volt; QO and QOB breakers and 35, 40, 45, 50, 60, 70, 80, 90 and 100 ampere, two pole, Q1 breakers are approved for use on 3Ø, Grounded "B" Ø systems.

NOTE: Panelboards are also approved for use with 10,000 A.I.C. or 75,000 A.I.C. rated breakers. Breakers listed Page 57.

All dimensions in inches.



CIRCUIT BREAKER PANELBOARDS

Selection and Pricing — UNASSEMBLED TYPE

QO
NQOB

METHOD OF SELECTING AND PRICING COMPONENTS

1. List circuit breakers required. See Page 57 for Catalog Numbers.
2. Determine equivalent total number of poles required. (See "Panelboard Space Requirements" table, at right.)
3. Select proper Main Lugs or Main Breaker Basic Device (Standard or Column width), based on equivalent total number of poles, from tables below. Basic device consists of Box with Interior Assembly and Solid Neutral mounted.
4. Select Front required adding Suffix "F" for flush mounting or "S" for surface mounting.
5. For complete panelboard price, add price of circuit breakers required from Circuit Breaker Price Table to price of Basic Device and Front.

1 PHASE 3 WIRE

Max. No. of Single Poles	Amp. Cap. of Mains	Basic Device and Front Price	Basic Device Only (Less Breakers)			● MONO-FLAT Front Only		
			Catalog Number		Price	Catalog Number		Price
			Type NQO	Type NQOB		Type NQO	Type NQOB	
MAINS: LUGS ONLY								
12	100	\$ 94.	NQO-20-123	NQOB-23-123	\$ 64.	NQO-20TF or S	MSC-23TF or S	\$30.
20	100	112.	NQO-24-203-1	NQOB-26-203-1	80.	NQO-24TF or S	MSC-26TF or S	32.
20	225	117.	NQO-24-203-2	NQOB-26-203-2	85.	NQO-24TF or S	MSC-26TF or S	32.
30	225	136.	NQO-28-303	NQOB-29-303	96.	NQO-28TF or S	MSC-29TF or S	39.
42	225	157.	NQO-32-423	NQOB-35-423	116.	NQO-32TF or S	MSC-35TF or S	41.
*54	225	178.	NQO-37-543		131.	NQO-37TF or S		47.
30	400	193.	NQO-38-303-4		141.	MDC-38TF or S		52.
42	400	215.	NQO-41-423-4		158.	MDC-41TF or S		56.

MAINS: CIRCUIT BREAKER — 2 POLE								
8	100	\$149.	NQO-24-123M	NQOB-23-083M	\$119.	NQO-24TF or S	MSC-23TF or S	\$30.
12	100	157.	NQO-24-123M	NQOB-26-163M	126.	NQO-24TF or S	MSC-26TF or S	32.
16	100	164.	NQO-28-203M	NQOB-29-203M	132.	NQO-28TF or S	MSC-29TF or S	39.
20	100	175.	NQO-28-203M	NQOB-38-303M	136.	NQO-37TF or S	MSC-38TF or S	47.
30	225	369.	NQO-32-423M	NQOB-44-423M	342.	NQO-42TF or S	MSC-44TF or S	49.
42	225	391.	NQO-42-423M		360.	NQO-48TF or S		62.
*54	225	412.	NQO-48-543M		532.	MDC-50TF or S		62.
30	400	594.	NQO-50-303-4M		543.	MDC-53TF or S		68.
42	400	618.	NQO-53-423-4M					

MAINS: LUGS ONLY								
14	100	\$ 97.	NQO-826-143		\$ 87.	LX-26TF or S		\$30.
20	100	112.	NQO-832-203		90.	LX-32TF or S		32.
30	225	135.	NQO-840-303		96.	LX-40TF or S		39.
42	225	157.	NQO-848-423		116.	LX-49TF or S		41.

MAINS: CIRCUIT BREAKER — 2 POLE								
14	100	\$160.	NQO-832-143M		\$128.	LX-32TF or S		\$32.
20	100	175.	NQO-840-203M		136.	LX-40TF or S		39.

3 PHASE 4 WIRE

Max. No. of Single Poles	Amp. Cap. of Mains	Basic Device and Front Price	Basic Device Only (Less Breakers)			●MONO-FLAT Front Only		
			Catalog Number		Price	Catalog Number		Price
			Type NQO	Type NQOB		Type NQO	Type NQOB	
MAINS: LUGS ONLY								
12	100	\$108.	NQO-20-124	NQOB-23-124	\$ 76.	NQO-20TF or S	MSC-23TF or S	\$30.
20	100	124.	NQO-24-204	NQOB-26-204	82.	NQO-24TF or S	MSC-26TF or S	32.
30	100	142.	NQO-28-304-1	NQOB-29-304-1	100.	NQO-28TF or S	MSC-29TF or S	39.
30	225	151.	NQO-28-304-2	NQOB-29-304-2	112.	NQO-28TF or S	MSC-29TF or S	39.
42	225	178.	NQO-32-424	NQOB-35-424	132.	NQO-32TF or S	MSC-35TF or S	41.
*54	225	194.	NQO-37-544		147.	NQO-37TF or S		47.
30	400	212.	NQO-38-304-4		160.	MDC-38TF or S		52.
42	400	234.	NQO-41-424-4		178.	MDC-41TF or S		56.

MAINS: CIRCUIT BREAKER — 3 POLE								
12	50	\$164.	NQO-24-124M	NQOB-26-144M	\$132.	NQO-24TF or S	MSC-26TF or S	\$32.
14	100	192.	NQO-28-204M	NQOB-29-244M	160.	NQO-28TF or S	MSC-29TF or S	39.
20	100	207.	NQO-32-304M	NQOB-35-304M	175.	NQO-32TF or S	MSC-35TF or S	41.
24	100	214.	NQO-42-424M	NQOB-44-424M	184.	NQO-42TF or S	MSC-44TF or S	49.
30	100	225.	NQO-48-544M		431.	NQO-48TF or S		52.
*54	225	462.	NQO-50-304-4M		828.	MDC-50TF or S		62.
30	400	690.	NQO-53-424-4M		844.	MDC-53TF or S		68.

MAINS: LUGS ONLY								
14	100	\$109.	NQO-826-144		\$79.	LX-26TF or S		\$30.
20	100	124.	NQO-832-204		92.	LX-32TF or S		32.
30	100	142.	NQO-840-304		103.	LX-40TF or S		39.
42	225	173.	NQO-848-424		132.	LX-49TF or S		41.

MAINS: CIRCUIT BREAKER — 3 POLE								
14	50	\$167.	NQO-832-144M		\$135.	LX-32TF or S		\$32.
20	100	207.	NQO-840-204M		188.	LX-40TF or S		39.
30	100	225.	NQO-848-304M		185.	LX-45TF or S		40.

- † For KA Main Breaker, add \$22.00.
* Refer to 42 Circuit Rule — N.E.C. Para. 384-14 and 384-15.
● Column width has screw cover front

PANELBOARD SPACE REQUIREMENTS

Number of single pole spaces required.

Amp. Cap. of Mains	QO or QOB Circuit Breakers			Q1 Circuit Breakers		
	1P	2P	3P	1P	2P	3P
100	1	2	3	2	4	6
225	1	2	3	2	4	6
400	1	2	3	1	2	3

CIRCUIT BREAKER PRICE TABLE

No. of Brkrs.	QO and QOB			Q1	
	1 Pole	2 Pole	3 Pole	2 Pole	3 Pole
	120 V.	120/240 V.	240 V.	240 V.	240 V.
	15-50 A.	15-60 A.	15-60 A.	70-100 A.	70-100 A.
1	\$ 8.30	\$ 7.70	\$ 26.30	\$ 21.10	\$ 39.00
2	6.60	15.40	52.60	42.20	78.00
3	9.80	23.10	78.90	63.30	117.00
4	13.20	30.80	106.20	84.40	158.00
5	16.50	38.50	131.50	105.50	195.00
6	19.80	46.20	157.80	126.60	234.00
7	23.10	53.90	184.10	147.70	273.00
8	26.40	61.60	210.40	168.80	312.00
9	29.70	69.30	236.70	189.90	351.00
10	33.00	77.00	263.00	211.00	390.00
11	36.30	84.70	289.30	232.10	429.00
12	39.60	92.40	315.60	253.20	468.00
13	42.90	100.10	341.90	274.30	507.00
14	46.20	107.80	368.20	295.40	546.00
15	49.50	115.50		316.50	
16	52.80	123.20		337.60	
17	56.10	130.90		358.70	
18	59.40	138.60		379.80	
19	62.70	146.30		400.90	
20	66.00	154.00		422.00	
21	69.30	161.70		443.10	

▲ Prices shown do not apply to QO and QOB, 70 ampere, 2 pole, 120/240 V and QO and QOB, 15-50 ampere, 2 pole, 240 V., branch breakers

SAMPLE ESTIMATE

No. Req'd	Brkr. Amp.	No. Poles	Catalog Number	Total Poles	Price Each	Total Price
8	20	1	QO-120	8	\$ 8.30	\$ 66.40
2	40	2	QO-240	4	7.70	30.80
2	50	3	QO-350	6	26.30	157.80
1	100	2	Q1-2100	4	21.10	84.40
2	100	3	Q1-3100	12	39.00	468.00
				34		
Nearest Main Lugs Basic Device:						
1	225	3φ, 4 W.	NQO-32-424			132.00
1			NQO-32-TF			41.00
						Total \$366.50

NOTE: For Accessories, see Page 85.



CIRCUIT BREAKER PANELBOARDS

TYPE
NQO

240 V. AC

•FACTORY ASSEMBLED TYPE

APPLICATION: For use on AC only. Meets Federal Specification W-P-115a, Type I, Class I. Listed by Underwriters' Laboratories.
(Federal Specification requires KA breaker be used for 225 A. main breaker.†)

SERVICE: 1φ 2 W., 1φ 3 W., 3φ 3 W., 3φ 4 W.
+3φ, Grd. "B" φ.

MAINS: 240 V. Max. AC
Distributed Phase Bussing
Main Lugs:
100 A. — 40 Al or Cu Wire
225 A. — 300 MCM Al or Cu Wire

BRANCHES: Plug-On QO and Q1 rated at 5000 A.I.C. AC. Meet Federal Specifications W-C-375a, Class 1a and 1b.
QO — 15- 30 A., 1, 2 and 3 Pole — #8 Al or #10 Cu wire
QO — 40- 50 A., 1, 2 and 3 Pole — #4 Al or #6 Cu wire
QO — 60- 70 A., 2 and 3 Pole — #2 Al or #4 Cu wire
Q1 — 70-100 A., 2 and 3 Pole — #0 Al or Cu wire

CABINETS: **MONO-FLAT®** Fronts with concealed trim clamps, door with concealed hinges and flush lock, gray baked enamel finish.

Boxes — Galvanized steel with knockouts.
Main Lugs — 14" wide x 4" deep.

GUTTERS: Top and bottom — 5" Min.

Sides — 4" and 7"

Main Breaker — 14" wide x 5 3/4" deep

Panelboard ordering information on Page 86.



1 PHASE 3 WIRE

No. Brkr. Poles	Mains Rating	Catalog Number	Price	Box Cat. No.	MONO-FLAT Front Cat. No.	Box Dimensions		
						H	W	D
MAINS: LUGS ONLY								
8	100	NQO-08-3L	\$128.	NQ-20B	NQC-20T	20 1/4	14	4
10	100	NQO-10-3L	141.	NQ-20B	NQC-20T	20 1/4	14	4
12	100	NQO-12-3L	154.	NQ-20B	NQC-20T	20 1/4	14	4
14	100	NQO-14-3L	167.	NQ-24B	NQC-24T	24 1/4	14	4
16	100	NQO-16-3L	180.	NQ-24B	NQC-24T	24 1/4	14	4
18	100	NQO-18-3L	193.	NQ-24B	NQC-24T	24 1/4	14	4
20	100	NQO-20-3L	206.	NQ-24B	NQC-24T	24 1/4	14	4
22	225	NQO-22-3L	224.	NQ-28B	NQC-28T	28	14	4
24	225	NQO-24-3L	237.	NQ-28B	NQC-28T	28	14	4
26	225	NQO-26-3L	250.	NQ-28B	NQC-28T	28	14	4
28	225	NQO-28-3L	263.	NQ-28B	NQC-28T	28	14	4
30	225	NQO-30-3L	276.	NQ-28B	NQC-28T	28	14	4
32	225	NQO-32-3L	289.	NQ-32B	NQC-32T	32 1/2	14	4
34	225	NQO-34-3L	302.	NQ-32B	NQC-32T	32 1/2	14	4
36	225	NQO-36-3L	315.	NQ-32B	NQC-32T	32 1/2	14	4
38	225	NQO-38-3L	328.	NQ-32B	NQC-32T	32 1/2	14	4
40	225	NQO-40-3L	341.	NQ-32B	NQC-32T	32 1/2	14	4
42	225	NQO-42-3L	354.	NQ-32B	NQC-32T	32 1/2	14	4

MAINS: CIRCUIT BREAKER — 2 POLE

No. Brkr. Poles	Mains Rating	Catalog Number	Price	Box Cat. No.	MONO-FLAT Front Cat. No.	Box Dimensions		
						H	W	D
8	50	NQO-08-3AB	\$167.	NQ-524B	NQC-24T	24 1/4	14	5 3/4
10	50	NQO-10-3AB	180.	NQ-524B	NQC-24T	24 1/4	14	5 3/4
12	100	NQO-12-3AB	215.	NQ-524B	NQC-24T	24 1/4	14	5 3/4
14	100	NQO-14-3AB	228.	NQ-528B	NQC-28T	28	14	5 3/4
16	100	NQO-16-3AB	241.	NQ-528B	NQC-28T	28	14	5 3/4
18	100	NQO-18-3AB	254.	NQ-528B	NQC-28T	28	14	5 3/4
20	100	NQO-20-3AB	267.	NQ-528B	NQC-28T	28	14	5 3/4
22	225+	NQO-22-3AB	458.	NQ-537B	NQC-37T	37 1/4	14	5 3/4
24	225+	NQO-24-3AB	468.	NQ-537B	NQC-37T	37 1/4	14	5 3/4
26	225+	NQO-26-3AB	478.	NQ-537B	NQC-37T	37 1/4	14	5 3/4
28	225+	NQO-28-3AB	488.	NQ-537B	NQC-37T	37 1/4	14	5 3/4
30	225+	NQO-30-3AB	505.	NQ-537B	NQC-37T	37 1/4	14	5 3/4
32	225+	NQO-32-3AB	518.	NQ-542B	NQC-42T	42 1/4	14	5 3/4
34	225+	NQO-34-3AB	531.	NQ-542B	NQC-42T	42 1/4	14	5 3/4
36	225+	NQO-36-3AB	544.	NQ-542B	NQC-42T	42 1/4	14	5 3/4
38	225+	NQO-38-3AB	557.	NQ-542B	NQC-42T	42 1/4	14	5 3/4
40	225+	NQO-40-3AB	570.	NQ-542B	NQC-42T	42 1/4	14	5 3/4
42	225+	NQO-42-3AB	583.	NQ-542B	NQC-42T	42 1/4	14	5 3/4

†For KA Main Breaker add \$22.00

PRICING AND BREAKER SELECTION PROCEDURE

Breakers: 15-60 ampere, 1, 2 and 3 pole and 70 ampere, 2 pole QO breakers are twin mounted.
70-100 ampere, Q1 breakers are single mounted requiring twice the space of QO breakers.

Price Additions for Each Two and Three Pole Breaker:

Convert to equivalent number of single pole breakers as indicated below and add to the price of the panelboard as follows:

No. Poles	Breaker Ampere Rating	Voltage	Brkr.	Equiv. No of Single Pole	Price Addition
2	15 - 60A	120/240	QO	2	\$ 1.10
2	15 - 60A	240	QO	2	9.50
2	70A	120/240	QO	2	9.00
2	70 - 100A	240	Q1	4	7.90
3	15 - 60A	240	QO	3	16.40
3	70 - 100A	240	Q1	6	19.20

Space Only:

When space only for future branches is required, figure panelboard on basis of total number of poles, including the future branches, and deduct \$3.30 for each single pole omitted.

3 PHASE 4 WIRE

No. Brkr. Poles	Mains Rating	Catalog Number	Price	Box Cat. No.	MONO-FLAT Front Cat. No.	Box Dimensions		
						H	W	D
MAINS: LUGS ONLY								
8	100	NQO-08-4L	\$140.	NQ-20B	NQC-20T	20 1/4	14	4
10	100	NQO-10-4L	153.	NQ-20B	NQC-20T	20 1/4	14	4
12	100	NQO-12-4L	166.	NQ-20B	NQC-20T	20 1/4	14	4
14	100	NQO-14-4L	179.	NQ-24B	NQC-24T	24 1/4	14	4
16	100	NQO-16-4L	192.	NQ-24B	NQC-24T	24 1/4	14	4
18	100	NQO-18-4L	205.	NQ-24B	NQC-24T	24 1/4	14	4
20	100	NQO-20-4L	218.	NQ-24B	NQC-24T	24 1/4	14	4
22	100	NQO-22-4L	231.	NQ-28B	NQC-28T	28	14	4
24	100	NQO-24-4L	244.	NQ-28B	NQC-28T	28	14	4
26	100	NQO-26-4L	257.	NQ-28B	NQC-28T	28	14	4
28	100	NQO-28-4L	270.	NQ-28B	NQC-28T	28	14	4
30	100	NQO-30-4L	283.	NQ-28B	NQC-28T	28	14	4
32	225	NQO-32-4L	305.	NQ-32B	NQC-32T	32 1/2	14	4
34	225	NQO-34-4L	318.	NQ-32B	NQC-32T	32 1/2	14	4
36	225	NQO-36-4L	331.	NQ-32B	NQC-32T	32 1/2	14	4
38	225	NQO-38-4L	344.	NQ-32B	NQC-32T	32 1/2	14	4
40	225	NQO-40-4L	357.	NQ-32B	NQC-32T	32 1/2	14	4
42	225	NQO-42-4L	370.	NQ-32B	NQC-32T	32 1/2	14	4

MAINS: CIRCUIT BREAKER — 3 POLE

No. Brkr. Poles	Mains Rating	Catalog Number	Price	Box Cat. No.	MONO-FLAT Front Cat. No.	Box Dimensions		
						H	W	D
8	50	NQO-08-4AB	\$197.	NQ-524B	NQC-24T	24 1/4	14	5 3/4
10	50	NQO-10-4AB	210.	NQ-524B	NQC-24T	24 1/4	14	5 3/4
12	50	NQO-12-4AB	223.	NQ-524B	NQC-24T	24 1/4	14	5 3/4
14	100	NQO-14-4AB	261.	NQ-528B	NQC-28T	28	14	5 3/4
16	100	NQO-16-4AB	274.	NQ-528B	NQC-28T	28	14	5 3/4
18	100	NQO-18-4AB	287.	NQ-528B	NQC-28T	28	14	5 3/4
20	100	NQO-20-4AB	300.	NQ-528B	NQC-28T	28	14	5 3/4
22	100	NQO-22-4AB	313.	NQ-532B	NQC-37T	37 1/4	14	5 3/4
24	100	NQO-24-4AB	326.	NQ-532B	NQC-37T	37 1/4	14	5 3/4
26	100	NQO-26-4AB	339.	NQ-532B	NQC-37T	37 1/4	14	5 3/4
28	100	NQO-28-4AB	352.	NQ-537B	NQC-37T	37 1/4	14	5 3/4
30	100	NQO-30-4AB	365.	NQ-532B	NQC-37T	37 1/4	14	5 3/4
32	225+	NQO-32-4AB	586.	NQ-542B	NQC-42T	42 1/4	14	5 3/4
34	225+	NQO-34-4AB	599.	NQ-542B	NQC-42T	42 1/4	14	5 3/4
36	225+	NQO-36-4AB	612.	NQ-542B	NQC-42T	42 1/4	14	5 3/4
38	225+	NQO-38-4AB	625.	NQ-542B	NQC-42T	42 1/4	14	5 3/4
40	225+	NQO-40-4AB	638.	NQ-542B	NQC-42T	42 1/4	14	5 3/4
42	225+	NQO-42-4AB	651.	NQ-542B	NQC-42T	42 1/4	14	5 3/4

Column Width NQO (8 5/8" Wide, 5" Deep for 10" WF Beams) are listed on Page 62.

Other Boxes: Boxes shown are standard. 14" W x 4" D, 14" W x 5 3/4" D or 20" W x 5 3/4" D can be furnished at no extra charge when specified.

•15, 20, 25 and 30 ampere, two pole, 240 volt, QO breakers and 35, 40, 45, 50, 60, 70, 80, 90 and 100 ampere, two pole Q1 are approved for use on 3φ, Grounded "B" φ systems.

•Price additional features from Pages 84 and 85.

SAMPLE ESTIMATE

No. Req'd	Breaker	Breaker Amp.	No. Poles	Total Branch Poles	Price
20	QO	20	1	20	\$ 0.00
1	QO	30	2	2	1.10
2	QO	20	3	6	32.80
1	Q1	70	2	4	7.90
1	Q1	100	3	6	19.20
1	NQO-38-4L (3φ, 4W)			38	344.00
				Total	\$405.00



CIRCUIT BREAKER PANELBOARDS

• FACTORY ASSEMBLED TYPE

240 V. AC

TYPE
NQO
NQH



APPLICATION: For use on AC only. Meets Federal Specification W-P-115a, Type I, Class 1. Listed by Underwriters' Laboratories.
(Federal Specification requires KA breaker be used for 225 A. main breaker †)

SERVICE: 1 ϕ 2 W., 1 ϕ 3 W., 3 ϕ 3 W., 3 ϕ 4 W.
‡3 ϕ , Grd. "B" ϕ .
240 V. Max. AC

MAINS: Distributed Phase Bussing
Main Lugs:
100 A. — #0 Al or Cu Wire
225 A. — 300 MCM Al or Cu Wire
400 A. — 2-500 MCM Al or Cu Wire

Main Breakers:
100 A. — AIB — #0 Al or Cu Wire
225 A. — Q2† — 300 MCM Al or Cu Wire
400 A. — LA — 2-250 MCM or
1-600 MCM Al or Cu Wire

BRANCHES: Plug on QO or Q1 rated 5,000 A.I.C. A.C., meet Federal Specifications W-C-375a, Class 1a and 1b, QO-H or Q1-H rated 10,000 A.I.C. A.C. and QH rated 75,000 A.I.C. A.C.
QO 15-30 A., 1, 2 and 3 Pole — #8 Al or #10 Cu Wire
QO 40-50 A., 1, 2 and 3 Pole — #4 Al or #6 Cu Wire
QO 60-70 A., 2 and 3 Pole — #2 Al or #4 Cu Wire
Q1 70-100 A., 2 and 3 Pole — #0 Al or Cu Wire

CABINETS: **MONO-FLAT**® fronts with concealed trim clamps, door with concealed hinges and flush lock, gray baked enamel finish.
Boxes — Galvanized steel with knockouts, 20" wide, 5 $\frac{3}{4}$ " deep.

GUTTERS: Top and Bottom — 8" minimum
Sides — 7"

Panelboard ordering information on Page 86

PRICING

SOLID NEUTRAL PRICE

100 A.	225 A.	400 A.
\$14.00	\$14.00	\$40.00

BRANCH BREAKERS — PRICE PER BREAKER

Breaker Ampere Rating	1 POLE 120 V.	2 POLE 120/240 V.	2 POLE 240 V.	3 POLE 240 V.
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QO 5,000 A.I.C.

15-60 A. 70A.	\$ 6.50	\$14.00	\$28.00	\$35.00
90-100 A.		24.00	27.00*	48.00*
▲Space Only (Per Brkr.)	3.00	6.00	6.00	9.00

QO-H 10,000 A.I.C.

15-30 A. 40-60 A.	\$ 9.50**	\$22.00**		\$35.00**
70-100 A.	13.50	28.00		44.00
▲Space Only (per Brkr.)	3.00	6.00		9.00

QH 75,000 A.I.C.

15-30 A.	\$15.50	\$36.00		\$62.00
▲Space Only (Per Brkr.)	3.00	6.00		9.00

BASE PRICE

No. of Poles	PRICE		
	100 A.	225 A.	400 A.

Main Lugs:

2	\$62.	\$67.	\$100.
3	74.	83.	119.

Main Breaker:

	AIB	FH	Q2	KH	LA	LH
2	\$124.	\$212.	\$297.†	\$597.	\$501.	\$806.
3	157.	247.	370.†	716.	597.	926.

*Q1, other circuits are QO.

**QO-H, other circuits are Q1-H.

†For KA, add \$22.

▲Space only charge includes branch breaker connectors.

• ADDITIONAL FEATURES

No. of Poles	PRICE	
	100 A. — 225 A.	400 A.

Split Bus:

2	\$32.00	\$68.00
3	46.00	81.00

Sub-Feed Lugs:

2	\$13.30	\$40.00
3	13.30	49.00

Sub-Feed Circuit Breaker: (Two per Panelboard) Q2, KA or KH.

No. of Poles	Price Each		Max. No. of Branch Poles	Box Height	
	Q2	KA		225A. ♦	400A. ♦
2	\$147.★	\$518.	12	35"	47"
3	180.‡	630.	28	41"	53"
Space Only	87.	87.	44	47"	59"

★For KA, add \$ 85.

‡For KA, add \$111.

♦Main Lugs or Main Breaker

‡Do not include sub-feed breaker when determining box size.

BOX HEIGHTS (Inches) (†)

Max. No. of Poles	MAIN LUGS		MAIN BREAKER	
	225 A.	400 A.	225 A.	400 A.
30	29"	38"	38"	50"
42	35"	41"	44"	53"
54	38"	47"		59"
66		50"		

†For Cat. No. of box only, prefix letters "MH" to box heights shown above. Example: MH-38

♦ 15, 20, 25 and 30 ampere, two pole, 240 volt, QO breakers and 35, 40, 45, 50, 60, 70, 80, 90 and 100 ampere, two pole Q1 are approved for use on 3 ϕ , Grounded "B" ϕ systems.

• Price other additional features from Pages 84 and 85.

METHOD OF PRICING

1. Make listing similar to one shown on right.
2. Box sizes for panelboards without additional features may be determined from table at right. Total number of branch circuit poles, and select box from proper column in table. When additional features are required, consult Field Office for box sizes.
3. When number of poles exceeds maximum shown in table, estimate as two or more panelboards, adding sub-feed lugs as required so purchaser can cable panelboards together.
4. Insert at right of each item in listing, including solid neutral, branch circuits, mains and optional features as required, the price shown in the tables above. The total will be the price of the panelboard and cabinet.

SAMPLE ESTIMATE

No. Req'd.	Breaker	Breaker Amperes	No. Poles	Total Branch Poles	Price
20	QO	20	1	20	\$130.
1	QO	30	2	2	14.
2	QO	20	3	6	70.
2	Q1	70	3	6	96.
2	Q1	100	3	6	96.
1	Solid Neutral	400			40.
1	Main Breaker	400			597.
				Total Poles	40
				Total Price:	\$1043.
120/208 V., 3 ϕ , 4 W. Surface Mtd. Bottom Feed				Box Cat. No. MH-53	



CIRCUIT BREAKER PANELBOARDS

TYPE
NQO

240 V. AC

• FACTORY ASSEMBLED TYPE
COLUMN WIDTH

APPLICATION: For use on AC only. Meets Federal Specification W-P-115a, Type I, Class 1. Listed by Underwriters' Laboratories.

SERVICE: 1 ϕ 2 W., 1 ϕ 3 W., 3 ϕ 3 W., 3 ϕ 4 W.
#3 ϕ , Grd. "B" ϕ .
240 V., Max. AC

MAINS: Distributed Phase Bussing
Main Lugs:
100 A. — #0 Al or Cu wire
225 A. — 300 MCM Al or Cu wire

BRANCHES: Plug-On QO rated at 5000 A.I.C. AC. Meet Federal Specifications W-C-375a, Class 1a and 1b.
QO 15-30 A., 1, 2 and 3 Pole — #8 Al or #10 Cu wire
QO 40-50 A., 1, 2 and 3 Pole — #4 Al or #10 Cu wire
QO 60-70 A., 2 and 3 Pole — #2 Al or #4 Cu wire

Main Breaker — A1B
50 A. — #4 Al or Cu wire
100 A. — #0 Al or Cu wire

NOTE: Panelboards are also approved for use with 10,000 A.I.C. or 75,000 A.I.C. rated breakers. Consult local Field Office for pricing.

CABINETS: Fronts with door and flush lock, gray baked enamel finish.
Boxes — Galvanized steel with knockouts, 8 $\frac{3}{4}$ " wide, 5" deep (For 10" WF beams).

GUTTERS: Top and Bottom — 5"
Left Side — 2 $\frac{1}{2}$ "

Panelboard ordering information on Page 86.



1 PHASE 3 WIRE

No. Branch Poles	Mains Rating	Catalog Number	Price	Box Catalog Number	Front Catalog Number	Box Height (Inches)
MAINS: LUGS ONLY						
8	100	NQO-08-3LX	\$128.	LX-826B	LX-26T	26 $\frac{1}{2}$
10	100	NQO-10-3LX	141.	LX-826B	LX-26T	26 $\frac{1}{2}$
12	100	NQO-12-3LX	154.	LX-826B	LX-26T	26 $\frac{1}{2}$
14	100	NQO-14-3LX	167.	LX-826B	LX-26T	26 $\frac{1}{2}$
16	100	NQO-16-3LX	180.	LX-832B	LX-32T	32 $\frac{1}{2}$
18	100	NQO-18-3LX	193.	LX-832B	LX-32T	32 $\frac{1}{2}$
20	100	NQO-20-3LX	206.	LX-832B	LX-32T	32 $\frac{1}{2}$
22	225	NQO-22-3LX	224.	LX-840B	LX-40T	40
24	225	NQO-24-3LX	237.	LX-840B	LX-40T	40
26	225	NQO-26-3LX	250.	LX-840B	LX-40T	40
28	225	NQO-28-3LX	263.	LX-840B	LX-40T	40
30	225	NQO-30-3LX	276.	LX-840B	LX-40T	40
32	225	NQO-32-3LX	289.	LX-849B	LX-49T	49
34	225	NQO-34-3LX	302.	LX-849B	LX-49T	49
36	225	NQO-36-3LX	315.	LX-849B	LX-49T	49
38	225	NQO-38-3LX	328.	LX-849B	LX-49T	49
40	225	NQO-40-3LX	341.	LX-849B	LX-49T	49
42	225	NQO-42-3LX	354.	LX-849B	LX-49T	49

MAINS: CIRCUIT BREAKER — 2 POLE

No. Branch Poles	Mains Rating	Catalog Number	Price	Box Catalog Number	Front Catalog Number	Box Height (Inches)
8	50	NQO-08-2ABX	\$167.	LX-832B	LX-32T	32 $\frac{1}{2}$
10	50	NQO-10-2ABX	180.	LX-832B	LX-32T	32 $\frac{1}{2}$
12	100	NQO-12-2ABX	215.	LX-832B	LX-32T	32 $\frac{1}{2}$
14	100	NQO-14-2ABX	228.	LX-832B	LX-32T	32 $\frac{1}{2}$
16	100	NQO-16-2ABX	241.	LX-840B	LX-40T	40
18	100	NQO-18-2ABX	254.	LX-840B	LX-40T	40
20	100	NQO-20-2ABX	267.	LX-840B	LX-40T	40

Price Addition for Each Two and Three Pole Breaker:

Convert to equivalent number of single pole breakers as indicated below and add to the price of the panelboard as follows:

No. Poles	Breaker Ampere Rating	Voltage	Breaker	Equiv. No. of Single Pole	Price Addition
2	15-50A	120/240	QO	2	\$ 1.10
2	15-50A	240	QO	2	9.50
2	70A	120/240	QO	2	9.00
2	15-60A	240	QO	3	16.40

Space Only:

When space only for future branches is required, figure panelboard on basis of total number of poles including the future branches, and deduct \$3.30 for each single pole omitted.

SAMPLE ESTIMATE

No. Req'd.	Breaker	Breaker Amp.	No. Poles	Total Branch Poles	Price Addition
20	QO	20	1	20	\$ 0.00
1	QO	30	2	2	1.10
2	QO	20	3	6	32.80
1	NQO-28-4LX (3 ϕ -4W)			28	270.00
Total					\$303.90

3 PHASE 4 WIRE

No. Branch Poles	Mains Rating	Catalog Number	Price	Box Catalog Number	Front Catalog Number	Box Height (Inches)
MAINS: LUGS ONLY						
8	100	NQO-08-4LX	\$140.	LX-826B	LX-26T	26 $\frac{1}{2}$
10	100	NQO-10-4LX	153.	LX-826B	LX-26T	26 $\frac{1}{2}$
12	100	NQO-12-4LX	166.	LX-826B	LX-26T	26 $\frac{1}{2}$
14	100	NQO-14-4LX	179.	LX-826B	LX-26T	26 $\frac{1}{2}$
16	100	NQO-16-4LX	192.	LX-832B	LX-32T	32 $\frac{1}{2}$
18	100	NQO-18-4LX	205.	LX-832B	LX-32T	32 $\frac{1}{2}$
20	100	NQO-20-4LX	218.	LX-832B	LX-32T	32 $\frac{1}{2}$
22	100	NQO-22-4LX	231.	LX-840B	LX-40T	40
24	100	NQO-24-4LX	244.	LX-840B	LX-40T	40
26	100	NQO-26-4LX	257.	LX-840B	LX-40T	40
28	100	NQO-28-4LX	270.	LX-840B	LX-40T	40
30	100	NQO-30-4LX	283.	LX-840B	LX-40T	40
32	225	NQO-32-4LX	305.	LX-849B	LX-49T	49
34	225	NQO-34-4LX	318.	LX-849B	LX-49T	49
36	225	NQO-36-4LX	331.	LX-849B	LX-49T	49
38	225	NQO-38-4LX	344.	LX-849B	LX-49T	49
40	225	NQO-40-4LX	357.	LX-849B	LX-49T	49
42	225	NQO-42-4LX	370.	LX-849B	LX-49T	49

MAINS: CIRCUIT BREAKER — 3 POLE

No. Branch Poles	Mains Rating	Catalog Number	Price	Box Catalog Number	Front Catalog Number	Box Height (Inches)
8	50	NQO-08-3ABX	\$197.	LX-832B	LX-32T	32 $\frac{1}{2}$
10	50	NQO-10-3ABX	210.	LX-832B	LX-32T	32 $\frac{1}{2}$
12	50	NQO-12-3ABX	223.	LX-832B	LX-32T	32 $\frac{1}{2}$
14	100	NQO-14-3ABX	261.	LX-832B	LX-32T	32 $\frac{1}{2}$
16	100	NQO-16-3ABX	274.	LX-840B	LX-40T	40
18	100	NQO-18-3ABX	287.	LX-840B	LX-40T	40
20	100	NQO-20-3ABX	300.	LX-840B	LX-40T	40
22	100	NQO-22-3ABX	313.	LX-845B	LX-45T	45
24	100	NQO-24-3ABX	326.	LX-845B	LX-45T	45
26	100	NQO-26-3ABX	339.	LX-845B	LX-45T	45
28	100	NQO-28-3ABX	352.	LX-845B	LX-45T	45
30	100	NQO-30-3ABX	365.	LX-845B	LX-45T	45

Cable Troughs

Duct Length \pm	8 $\frac{3}{4}$ " x 5" Catalog Number	Price	6 $\frac{7}{8}$ " x 5" Catalog Number	Price
36"	▲ MTX-836	\$41.	MTX-636	\$41.
48"	▲ MTX-848	46.	MTX-648	46.
56"	▲ MTX-856	47.	MTX-656	47.
66"	▲ MTX-866	52.	MTX-666	52.

▲ U/L listed as Wireway under File E6625.

± See Page 85 for prices of duct longer than 66 inches.

Pull Boxes

S/N Terminals	Catalog Numbers	Price
26	* MPX-915-26	\$34.
42	MPX-915-42	34.

* U/L listed as Pullbox under File E25442.

For NEC restrictions on use of column width panelboards, refer to Page 63.

Column Width NQOB (8 $\frac{3}{4}$ " Wide, 5" Deep for 10" WF Beams) may be furnished at same price as NQOB Standard Width. Consult Distribution Equipment Catalog for Catalog Numbers and dimensions.

Column Width NQO or NQOB (6 $\frac{7}{8}$ " Wide, 5" Deep for 8" WF Beams) may be furnished at same price as 8 $\frac{3}{4}$ " Wide panelboards.

◆ 15, 20 and 30 ampere, two pole, 240 Volt, QO breakers are approved for use on 3 ϕ , Grounded "B" ϕ systems.

● Price additional features from Pages 84 and 85.



COLUMN WIDTH PANELBOARDS

APPLICATION DATA

When cable troughs are used with panelboards, Section 362-5 of the National Electrical Code should be observed. Section 362-5 reads "Wireways shall not contain more than 30 current carrying conductors at any cross section. Exception: Conductors for signal circuits or controller conductors between a motor and its starter and used only for starting duty shall not be considered as current carrying conductors. The sum of the cross-sectional areas of all contained conductors at any cross-section of a wireway shall not exceed 20% of the interior cross-sectional area of the wireway."

Therefore, if the neutral bar is mounted in the panelboard, 3 feeder wires and 27 branch circuit wires or 4 feeder wires and 26 branch circuit wires are permitted. If a separate neutral wire is run for each circuit, the largest panelboard acceptable would be 12 circuits. However, if common neutral conductors are used, the number of circuits in the panelboard could be increased.

In view of this ruling, it is advantageous and more economical to have the neutral bar mounted in the pullbox. Under the Code ruling, it would then be permissible to run 2 feeder wires and 28 branch circuit wires or 3 feeder wires and 27 branch circuit wires in the cable trough.

NOTE: If the conductors are derated in accordance with Exception No. 3 of Section 362-5 there is no limit to the number of conductors used but the cross-sectional area must still not exceed 20% as noted.

PANELBOARDS

Column Type Panelboards are narrow single row construction, designed primarily for H or I-Beam mounting. NQO (Pages 56 and 62); NQOB; NH1B (Page 68) and NA1B panelboards are available in LX construction, $8\frac{5}{8}$ " wide, suitable for mounting in 10" WF beams.

Types NQO and NQOB are also available in LXX construction, $6\frac{7}{8}$ " wide for mounting in 8" WF beams. Inside beam or column dimensions should be checked against box dimensions to determine if standard listed column type panelboards can be installed as desired.

Fronts are of screw-on type with standard flush lock and directory frame on door. Fronts are made of code gauge stretcher level steel and finished in gray.

Boxes are of three-piece construction with removable endwalls screwed to box backs. When cable duct is used with these boxes, the top endwall is usually removed from the box and re-installed at the top of the cable duct. Boxes are made of code gauge steel. Standard knockouts are provided in top and bottom endwalls of boxes.

CABLE DUCT AND PULL BOXES

Cable Duct and Pull Boxes are available for use with narrow column type panelboards when mounted in H or I-Beams. The cable duct is used as a wireway extension from the panelboard cabinet to the ceiling or truss, at which point a pullbox is installed on the front of the cable duct for conduit termination (see photo at left).

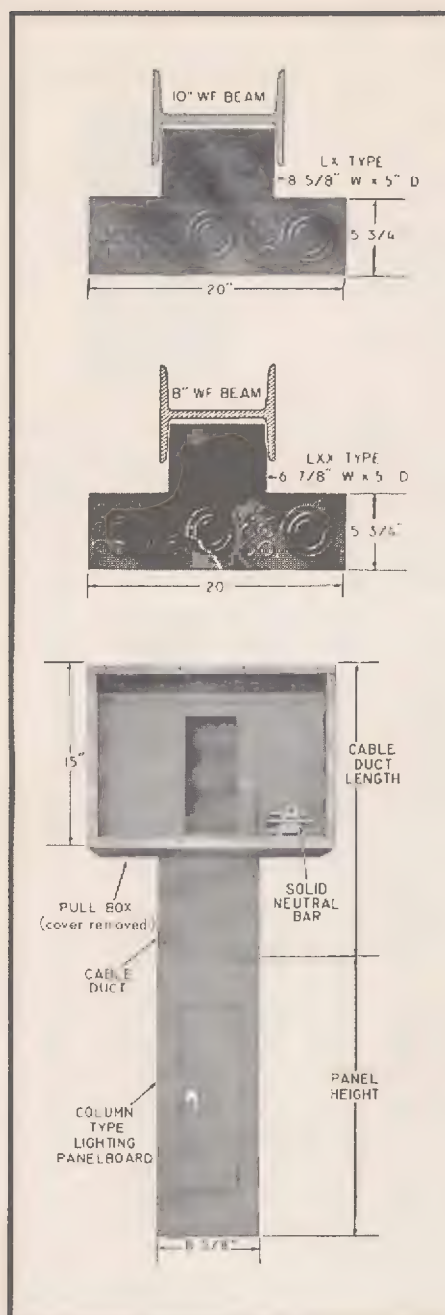
The Cable Duct has same steel and finish specifications as the column type panelboard boxes outlined above. Cross-sectional dimensions are same as panelboard boxes ($8\frac{5}{8}$ " wide and 5" deep or $6\frac{7}{8}$ " wide and 5" deep). Cable duct is available in four standard lengths of 36", 48", 56", and 66" and can be ganged together to meet most common truss or ceiling heights. Bottom of each cable duct is provided with a sleeve so that it may be fastened to the top of the panelboard box or used to gang duct sections together.

Fronts are of 2-piece screw-on type and furnished in surface type. The upper portion of the 2 piece front is 15" long and is removed when a pullbox is installed on the duct.

PANELBOARD DATA

Complete dimensional and selection data on column type panelboards is available in the Distribution Equipment Catalog as follows:

Type NQO.....	Catalog Section 1610
Type NQOB.....	Catalog Section 1620
Type NA1B.....	Catalog Section 1640
Type NH1B.....	Catalog Section 1650



Pull Boxes are 20" wide x 15" high x $5\frac{3}{4}$ " deep and have same steel and finish specifications as the cable ducts. Solid neutral bar is included in the pullbox. Top endwall has knockouts same as in 20" wide panelboard cabinets.



CIRCUIT BREAKER PANELBOARDS

TYPE
NQOB

240 V. AC

• FACTORY ASSEMBLED TYPE

APPLICATION: For use on AC only. Meets Federal Specification W-P-115a, Type I, Class 1. Listed by Underwriters' Laboratories.
(Federal Specification requires KA breaker be used for 225 A. main breaker,†)

SERVICE: 1φ 2 W., 1φ 3 W., 3φ 3 W., 3φ 4 W.
43 φ, Grd. "B" φ.
240 V. Max. AC only.

MAINS: Distributed Phase Bussing
Main Lugs:
100 A. — #0 Al or Cu Wire
225 A. — 300 MCM Al or Cu Wire

Main Breaker:
50 A. A1B — #4 Al or Cu Wire
100 A. A1B — #0 Al or Cu Wire
225 A. Q2† — 300 MCM Al or Cu Wire

BRANCHES: Bolt-On QOB and Q1B. Rated at 5000 A.I.C. AC. Meet Federal Specifications W-C-375a Class Ia and Ib.

QOB — 15-30 A., 1, 2 and 3 Pole — #8 Al or #10 Cu Wire
QOB — 40- 50 A., 1, 2 and 3 Pole — #4 Al or #6 Cu Wire
QOB — 60- 70 A., 2 and 3 Pole — #2 Al or #4 Cu Wire
Q1B — 70-100 A., 2 and 3 Pole — #0 Al or Cu Wire

NOTE: Panelboards are also approved for use with 10,000 A.I.C. or 75,000 A.I.C. rated breakers. Consult local Field Office for pricing.

CABINETS: **MONO-FLAT*** Fronts with concealed trim clamps, door with concealed hinges and flush lock, gray baked enamel finish.
Boxes — Galvanized steel with knockouts, 20" wide, 5¾" deep.

GUTTERS: Top and Bottom — 5" Sides — 6½"
Panelboard ordering information on Page 86.



1 PHASE 3 WIRE

No. Brkr. Poles	Mains Rating	Catalog Number	Price	Box Cat. No.	MONO-FLAT Front Cat. No.	Box Height (Inches)
MAINS: LUGS ONLY						
8	100	NQOB-08-3L	\$128.	MH-23	MSC-23T	23
10	100	NQOB-10-3L	141.	MH-23	MSC-23T	23
12	100	NQOB-12-3L	154.	MH-23	MSC-23T	23
14	100	NQOB-14-3L	167.	MH-26	MSC-26T	26
16	100	NQOB-16-3L	180.	MH-26	MSC-26T	26
18	100	NQOB-18-3L	193.	MH-26	MSC-26T	26
20	100	NQOB-20-3L	206.	MH-26	MSC-26T	26
22	225	NQOB-22-3L	224.	MH-29	MSC-29T	29
24	225	NQOB-24-3L	237.	MH-29	MSC-29T	29
26	225	NQOB-26-3L	250.	MH-29	MSC-29T	29
28	225	NQOB-28-3L	263.	MH-29	MSC-29T	29
30	225	NQOB-30-3L	276.	MH-29	MSC-29T	29
32	225	NQOB-32-3L	289.	MH-35	MSC-35T	35
34	225	NQOB-34-3L	302.	MH-35	MSC-35T	35
36	225	NQOB-36-3L	315.	MH-35	MSC-35T	35
38	225	NQOB-38-3L	328.	MH-35	MSC-35T	35
40	225	NQOB-40-3L	341.	MH-35	MSC-35T	35
42	225	NQOB-42-3L	354.	MH-35	MSC-35T	35

MAINS: CIRCUIT BREAKER 2 POLE

8	50	NQOB-08-3AB	\$167.	MH-23	MSC-23T	23
10	50	NQOB-10-3AB	180.	MH-26	MSC-26T	26
12	100	NQOB-12-3AB	215.	MH-26	MSC-26T	26
14	100	NQOB-14-3AB	228.	MH-26	MSC-26T	26
16	100	NQOB-16-3AB	241.	MH-26	MSC-26T	26
18	100	NQOB-18-3AB	254.	MH-29	MSC-29T	29
20	100	NQOB-20-3AB	267.	MH-29	MSC-29T	29
22	225†	NQOB-22-3AB	453.	MH-38	MSC-38T	38
24	225†	NQOB-24-3AB	466.	MH-38	MSC-38T	38
26	225†	NQOB-26-3AB	479.	MH-38	MSC-38T	38
28	225†	NQOB-28-3AB	492.	MH-38	MSC-38T	38
30	225†	NQOB-30-3AB	505.	MH-38	MSC-38T	38
32	225†	NQOB-32-3AB	518.	MH-44	MSC-44T	44
34	225†	NQOB-34-3AB	531.	MH-44	MSC-44T	44
36	225†	NQOB-36-3AB	544.	MH-44	MSC-44T	44
38	225†	NQOB-38-3AB	557.	MH-44	MSC-44T	44
40	225†	NQOB-40-3AB	570.	MH-44	MSC-44T	44
42	225†	NQOB-42-3AB	583.	MH-44	MSC-44T	44

†For KA Main Breaker add \$22.00

PRICING AND BREAKER SELECTION PROCEDURE

Breakers: QOB, 1, 2 and 3 pole breakers are twin mounted. 2 and 3 pole breakers may be mounted opposite an equivalent number of single pole breakers. Q1B breakers are single mounted requiring twice the space of QOB breakers. Q1B breakers cannot be mounted opposite QOB breakers.

Price Additions for Each Two and Three Pole Breaker:

Convert to equivalent number of single pole breakers as indicated below and add to the price of the panelboard as follows:

No. Poles	Breaker Ampere Rating	Voltage	Breaker	Equiv. No of Single Pole	Price Addition
2	15 - 60A	120/240	QOB	2	\$ 1.10
2	15 - 60A	240	QOB	2	9.50
2	70A	120/240	QOB	2	9.00
2	70 - 100A	240	Q1B	4	7.90
3	15 - 60A	240	QOB	3	16.40
3	70 - 100A	240	Q1B	6	19.20

Space Only:

When space only for future branches is required, figure panelboard on basis of total number of poles, including the future branches, and deduct \$3.30 for each single pole omitted.

3 PHASE 4 WIRE

No. Brkr. Poles	Mains Rating	Catalog Number	Price	Box Cat. No.	MONO-FLAT Front Cat. No.	Box Height (Inches)
MAINS: LUGS ONLY						
8	100	NQOB-08-4L	\$140.	MH-23	MSC-23T	23
10	100	NQOB-10-4L	153.	MH-23	MSC-23T	23
12	100	NQOB-12-4L	166.	MH-23	MSC-23T	23
14	100	NQOB-14-4L	179.	MH-26	MSC-26T	26
16	100	NQOB-16-4L	192.	MH-26	MSC-26T	26
18	100	NQOB-18-4L	205.	MH-26	MSC-26T	26
20	100	NQOB-20-4L	218.	MH-26	MSC-26T	26
22	100	NQOB-22-4L	231.	MH-29	MSC-29T	29
24	100	NQOB-24-4L	244.	MH-29	MSC-29T	29
26	100	NQOB-26-4L	257.	MH-29	MSC-29T	29
28	100	NQOB-28-4L	270.	MH-29	MSC-29T	29
30	100	NQOB-30-4L	283.	MH-29	MSC-29T	29
32	225	NQOB-32-4L	305.	MH-35	MSC-35T	35
34	225	NQOB-34-4L	318.	MH-35	MSC-35T	35
36	225	NQOB-36-4L	331.	MH-35	MSC-35T	35
38	225	NQOB-38-4L	344.	MH-35	MSC-35T	35
40	225	NQOB-40-4L	357.	MH-35	MSC-35T	35
42	225	NQOB-42-4L	370.	MH-35	MSC-35T	35

MAINS: CIRCUIT BREAKER — 3 POLE

8	50	NQOB-08-4AB	\$197.	MH-26	MSC-26T	26
10	50	NQOB-10-4AB	210.	MH-26	MSC-26T	26
12	50	NQOB-12-4AB	223.	MH-26	MSC-26T	26
14	50	NQOB-14-4AB	236.	MH-26	MSC-26T	26
16	100	NQOB-16-4AB	274.	MH-29	MSC-29T	29
18	100	NQOB-18-4AB	287.	MH-29	MSC-29T	29
20	100	NQOB-20-4AB	300.	MH-29	MSC-29T	29
22	100	NQOB-22-4AB	313.	MH-29	MSC-29T	29
24	100	NQOB-24-4AB	326.	MH-29	MSC-29T	29
26	100	NQOB-26-4AB	339.	MH-35	MSC-35T	35
28	100	NQOB-28-4AB	352.	MH-35	MSC-35T	35
30	100	NQOB-30-4AB	365.	MH-35	MSC-35T	35
32	225†	NQOB-32-4AB	586.	MH-44	MSC-44T	44
34	225†	NQOB-34-4AB	599.	MH-44	MSC-44T	44
36	225†	NQOB-36-4AB	612.	MH-44	MSC-44T	44
38	225†	NQOB-38-4AB	625.	MH-44	MSC-44T	44
40	225†	NQOB-40-4AB	638.	MH-44	MSC-44T	44
42	225†	NQOB-42-4AB	651.	MH-44	MSC-44T	44

Column Width NQOB (8½" Wide, 5" Deep for 10" WF Beams or 6¾" Wide, 5" Deep for 8" WF Beams) may be furnished at same price as NQOB Standard Width. Consult Distribution Equipment Catalog, Section 1620, for Catalog Numbers and dimensions.

†15, 20, 25 and 30 ampere, two pole, 240 Volt, QOB breakers and 35, 40, 45, 50, 60, 70, 80, 90 and 100 ampere, two pole Q1B are approved for use on 3φ, Grounded "B" φ systems.

•Price additional features from Pages 84 and 85.

SAMPLE ESTIMATE

No. Req'd.	Breaker	Breaker Amp.	No. Poles	Total Branch Poles	Price
20	QOB	20	1	20	\$ 0.00
1	QOB	30	2	2	1.10
2	QOB	20	3	6	32.80
1	Q1B	70	2	4	7.90
1	Q1B	100	3	6	19.20
1	NQOB-38-4L (3φ-4W)			38	344.00
				Total	5405.00



CIRCUIT BREAKER PANELBOARDS

FACTORY ASSEMBLED TYPE

240 V. AC

TYPE
NQOB
NQHB



APPLICATION: For use on AC only. Meets Federal Specification W-P-115a, Type I, Class I. Listed by Underwriters' Laboratories.

(Federal Specification requires KA breaker be used for 225 A. main breaker.†)

SERVICE: 1φ 2 W., 1φ 3 W., 3φ 3 W., 3φ 4 W.
#3φ, Grd. "B" φ.
240 V. Max. AC

MAINS: Distributed Phase Bussing
Main Lugs:

100 A. — #0 Al or Cu Wire
225 A. — 300 MCM Al or Cu Wire
400 A. — 2-500 MCM Al or Cu Wire
600 A. — 2-500 MCM Al or Cu Wire

Main Breakers:

100 A. — A1B — #0 Al or Cu Wire
225 A. — Q2† — 300 MCM Al or Cu Wire
400 A. — LA — 2-500 MCM or 1-600 MCM Al or Cu Wire

BRANCHES: Bolt-on QOB or Q1B rated 5,000 A.I.C., A.C., meet Federal Specifications W-C-375a, Class 1a and 1b, QOB-H or Q1B-H rated 10,000 A.I.C. A.C. and QHB rated 75,000 A.I.C. A.C.

QOB 15-30 A., 1, 2 and 3 Pole — #8 Al or #10 Cu Wire

QOB 40-50 A., 1, 2 and 3 Pole — #4 Al or #6 Cu Wire

QOB 60-70 A., 2 and 3 Pole — #2 Al or #4 Cu Wire

Q1B 70 = 100 A., 2 and 3 Pole — #0 Al or Cu Wire

A1B, E Frame, 15 - 100 A., 2 and 3 Pole also available Δ

CABINETS: **MONO-FLAT*** Fronts with concealed trim clamps, door with concealed hinges and flush lock, gray baked enamel finish.

Boxes — Galvanized steel with knockouts, 20" wide, 5 3/4" deep.

GUTTERS: Top and Bottom — 225 A. Mains — 5" Minimum.

400 A. and 600 A. Mains — 8" Minimum.

Sides — 4"

Panelboard ordering information on Page 86.

PRICING

SOLID NEUTRAL — PRICE

100 A.	225 A.	400 A.	600 A.
\$14.00	\$14.00	\$40.00	\$57.00

BRANCH BREAKERS — PRICE PER BREAKER

Breaker Ampere Rating	1 POLE 120 V	2 POLE 120/240 V.	2 POLE Δ 240 V.	3 POLE Δ 240 V.
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QOB 5,000 A.I.C.

15-30 A.	\$ 6.50	\$14.00	\$28.00	\$35.00
70 A.		24.00	27.00*	48.00*
90-100 A.		27.00*	27.00*	48.00*
Δ Space Only (Per Brkr.)	3.00	6.00	6.00	9.00

QOB-H 10,000 A.I.C.

15-30 A.	\$ 9.50**	\$22.00**		\$35.00
40-60 A.	13.50	28.00		44.00
70-100 A.		48.00		57.00
Δ Space only (Per Brkr.)	3.00	6.00		9.00

QHB 75,000 A.I.C.

15-30 A.	\$15.50	\$36.00		\$62.00
Δ Space Only (Per Brkr.)	3.00	6.00		9.00

BASE PRICE

No. of Poles	100 A.	225 A.	400 A.	600 A.
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Main Lugs:

2	\$62.	\$67.	\$100.	\$128.
3	74.	83.	119.	147.

Main Breaker:

	A1B	FH	Q2	KH	LA	LH
2	\$124.	\$212.	\$297.†	\$597.	\$501.	\$806.
3	157.	247.	370.†	716.	597.	926.

*Q1B, other circuits are QOB.

**QOB-H, other circuits are Q1B-H.

†For KA Main Breaker add \$22.00.

Δ Price 2 and 3 Pole, A1B, E Frame branches from Page 67.

Same space requirements as Q1B.

Δ Space only charge includes branch breaker connectors.

ADDITIONAL FEATURES

No. of Poles	100 A.—225 A.	400 A.	600 A.
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Split Bus:

2	\$32.00	\$68.00	\$81.00
3	46.00	81.00	88.00

Sub-Feed Lugs:

2	\$13.30	\$40.00	
3	13.30	49.00	

Sub-Feed Circuit Breaker: (Two per Panelboard) Q2, KA or KH.

No. of Poles	Price Each		♣Max. No. of Branch Poles	Box Height	
	Q2	KH		225A. ♦	400A. ♦
2	\$147.★	\$518.	12	35"	47"
3	180.‡	630.	28	41"	53"
Space Only	87.	87.	44	47"	59"

★For KA breaker, add \$85.

‡For KA breaker, add \$111.

♦Do not include sub-feed breaker when determining box size.

♦ Main Lugs or Main Breaker.

BOX HEIGHTS (1)

Max. No. of Poles	Main Lugs		Main Breakers	
	225 A.	400 or 600 A.	225 A.	400 A.
30	29"	38"	41"	50"
42	35"	41"	47"	53"
54	38"	47"		59"
66		50"		

①For Cat. No. of box only, prefix letters "MH" to box heights shown above. Example: MH-29.

•Price other additional features from Pages 84 and 85.

METHOD OF PRICING

1. Make listing similar to one shown on right.
2. Box sizes for panelboards without additional features may be determined from table at right. Total number of branch circuit poles, and select box from proper column in table. When additional features are required, consult Field Office for box sizes.
3. When number of poles exceeds maximum shown in table, estimate as two or more panelboards, adding sub-feed lugs as required so purchaser can cable panelboards together.
4. Insert at right of each item in listing, including solid neutral, branch circuits, mains and optional features as required, the price shown in the tables above. The total will be the price of the panelboard and cabinet.

♦15, 20, 25 and 30 ampere, two pole, 240 volt, QOB breakers and 35, 40, 45, 50, 60, 70, 80, 90 and 100 ampere, two pole Q1B breakers are approved for use on 3φ, Grounded "B" φ systems.

SAMPLE ESTIMATE

No. Req'd.	Breaker	Amperes	No. Poles	Total Branch Poles	Price
20	QOB	20	1	20	\$130.
1	QOB	30	2	2	14.
2	QOB	20	3	6	70.
1	Q1B	70	3	3	48.
1	Q1B	100	3	3	48.
1	Solid Neutral	225			24.
1	Main Breaker	225			370.
Total Poles				34	
Total Price					\$694.
120/208 V. 3φ, 4 W. Surface Mtd. Bottom Feed					Box Cat. No. MH-47



CIRCUIT BREAKER PANELBOARDS

TYPE
NA1B

240 V. AC
125/250 V. DC

• FACTORY ASSEMBLED TYPE

APPLICATION: For use on AC or DC systems. Meets Federal Specification W-P-115a, Type I, Class 1. Listed by Underwriters' Laboratories.

SERVICE: 1φ 2 W., 1φ 3 W., 3φ 3 W., 3φ 4 W.
240 V. Max. AC
125 V. or 125/250 V., DC

MAINS: Distributed Phase Bussing
Main Lugs:
100 A. — #0 Al or Cu Wire
225 A. — 300 MCM Al or Cu Wire

BRANCHES: Bolt-On A1B, E Frame rated at 10,000 A.I.C. AC or 5000 A.I.C. DC. Meet Federal Specifications W-C-375a, Class 2b and 2c.
15 20 A., 1, 2 and 3 Pole — #8 Al or Cu wire
30 50 A., 1, 2 and 3 Pole — #4 Al or Cu wire

CABINETS: **MONO-FLAT**® front with concealed trim clamps; door with concealed hinges and flush lock, gray baked enamel finish.
Boxes — Galvanized steel with knockouts, 20" wide, 5 3/4" deep.

GUTTERS: Top and Bottom — 5" Minimum.
Sides — 4" Minimum.

Panelboard ordering information on Page 86.

Main Breakers:
50 A. — A1B — #4 Al or Cu Wire
100 A. — A1B — #0 Al or Cu Wire
225 A. — KA† — 300 MCM Al or Cu Wire
50 100 A., 2 and 3 Pole — #0 Al or Cu wire



1 PHASE 3 WIRE

No. Brkr. Poles	Mains Rating	Catalog Number	Price	Box Cat. No.	MONO-FLAT Front Cat. No.	Box Height (Inches)
MAINS: LUGS ONLY						
8	100	NA1B-08-3L	\$210.	MH-26	MSC-26T	26
10	100	NA1B-10-3L	243.	MH-26	MSC-26T	26
12	100	NA1B-12-3L	276.	MH-29	MSC-29T	29
14	100	NA1B-14-3L	309.	MH-29	MSC-29T	29
16	100	NA1B-16-3L	342.	MH-35	MSC-35T	35
18	100	NA1B-18-3L	375.	MH-35	MSC-35T	35
20	100	NA1B-20-3L	408.	MH-35	MSC-35T	35
22	225	NA1B-22-3L	446.	MH-29	NDC-29T	29
24	225	NA1B-24-3L	479.	MH-29	NDC-29T	29
26	225	NA1B-26-3L	512.	MH-29	NDC-29T	29
28	225	NA1B-28-3L	545.	MH-29	NDC-29T	29
30	225	NA1B-30-3L	578.	MH-29	NDC-29T	29
32	225	NA1B-32-3L	611.	MH-35	NDC-35T	35
34	225	NA1B-34-3L	644.	MH-35	NDC-35T	35
36	225	NA1B-36-3L	677.	MH-35	NDC-35T	35
38	225	NA1B-38-3L	710.	MH-35	NDC-35T	35
40	225	NA1B-40-3L	743.	MH-35	NDC-35T	35
42	225	NA1B-42-3L	776.	MH-35	MDC-35T	35

MAINS: CIRCUIT BREAKER — 2 POLE

8	50	NA1B-08-3AB	\$251.	MH-26	MSC-26T	26
10	50	NA1B-10-3AB	284.	MH-29	MSC-29T	29
12	100	NA1B-12-3AB	339.	MH-29	MSC-29T	29
14	100	NA1B-14-3AB	372.	MH-35	MSC-35T	35
16	100	NA1B-16-3AB	405.	MH-35	MSC-35T	35
18	100	NA1B-18-3AB	438.	MH-35	MSC-35T	35
20	100	NA1B-20-3AB	471.	MH-29	MDC-29T	29
22	225+	NA1B-22-3AB	695.	MH-41	MDC-41T	41
24	225+	NA1B-24-3AB	728.	MH-41	MDC-41T	41
26	225+	NA1B-26-3AB	761.	MH-41	MDC-41T	41
28	225+	NA1B-28-3AB	794.	MH-41	MDC-41T	41
30	225+	NA1B-30-3AB	827.	MH-41	MDC-41T	41
32	225+	NA1B-32-3AB	860.	MH-47	MDC-47T	47
34	225+	NA1B-34-3AB	893.	MH-47	MDC-47T	47
36	225+	NA1B-36-3AB	926.	MH-47	MDC-47T	47
38	225+	NA1B-38-3AB	959.	MH-47	MDC-47T	47
40	225+	NA1B-40-3AB	992.	MH-47	MDC-47T	47
42	225+	NA1B-42-3AB	1025.	MH-47	MDC-47T	47

†For Q2 Main Breaker (240 V. AC only) deduct \$22.00

Price Addition for Each Two and Three Pole Breaker:

Convert to equivalent number of single pole breakers as indicated below and add to the price of the panelboard as follows:

No. Poles	Breaker Ampere Rating	Equiv. No. of Single Poles	Price Addition
2	15 — 60A.	2	\$ 7.20
2	70 — 100A.	2	28.20
3	15 — 60A.	3	8.80
3	70 — 100A.	3	31.80

Space Only: When space only for future branches is required, figure panelboards on basis of total number of branches and deduct \$7.80 for each breaker pole omitted.

Panelboards requiring more than 225 ampere bus must be priced from Page 67.

3 PHASE 4 WIRE

No. Brkr. Poles	Mains Rating	Catalog Number	Price	Box Cat. No.	MONO-FLAT Front Cat. No.	Box Height (Inches)
MAINS: LUGS ONLY						
8	100	NA1B-08-4L	\$224.	MH-26	MSC-26T	26
10	100	NA1B-10-4L	257.	MH-26	MSC-26T	26
12	100	NA1B-12-4L	290.	MH-29	MSC-29T	29
14	100	NA1B-14-4L	323.	MH-29	MSC-29T	29
16	100	NA1B-16-4L	356.	MH-35	MSC-35T	35
18	100	NA1B-18-4L	389.	MH-35	MSC-35T	35
20	100	NA1B-20-4L	422.	MH-35	MSC-35T	35
22	100	NA1B-22-4L	455.	MH-29	MDC-29T	29
24	100	NA1B-24-4L	488.	MH-29	MDC-29T	29
26	100	NA1B-26-4L	521.	MH-29	MDC-29T	29
28	100	NA1B-28-4L	554.	MH-29	MDC-29T	29
30	100	NA1B-30-4L	587.	MH-29	MDC-29T	29
32	225	NA1B-32-4L	627.	MH-35	MDC-35T	35
34	225	NA1B-34-4L	660.	MH-35	MDC-35T	35
36	225	NA1B-36-4L	693.	MH-35	MDC-35T	35
38	225	NA1B-38-4L	726.	MH-35	MDC-35T	35
40	225	NA1B-40-4L	759.	MH-35	MDC-35T	35
42	225	NA1B-42-4L	792.	MH-35	MDC-35T	35

MAINS: CIRCUIT BREAKER — 3 POLE

8	50	NA1B-08-4AB	\$281.	MH-29	MSC-29T	29
10	50	NA1B-10-4AB	314.	MH-29	MSC-29T	29
12	50	NA1B-12-4AB	347.	MH-29	MSC-29T	29
14	50	NA1B-14-4AB	380.	MH-35	MSC-35T	35
16	100	NA1B-16-4AB	437.	MH-35	MSC-35T	35
18	100	NA1B-18-4AB	470.	MH-35	MSC-35T	35
20	100	NA1B-20-4AB	503.	MH-29	MDC-29T	29
22	100	NA1B-22-4AB	536.	MH-29	MDC-29T	29
24	100	NA1B-24-4AB	569.	MH-29	MDC-29T	29
26	100	NA1B-26-4AB	602.	MH-35	MDC-35T	35
28	100	NA1B-28-4AB	635.	MH-35	MDC-35T	35
30	100	NA1B-30-4AB	668.	MH-35	MDC-35T	35
32	225+	NA1B-32-4AB	928.	MH-47	MDC-47T	47
34	225+	NA1B-34-4AB	961.	MH-47	MDC-47T	47
36	225+	NA1B-36-4AB	994.	MH-47	MDC-47T	47
38	225+	NA1B-38-4AB	1027.	MH-47	MDC-47T	47
40	225+	NA1B-40-4AB	1060.	MH-47	MDC-47T	47
42	225+	NA1B-42-4AB	1093.	MH-47	MDC-47T	47

Column Width NA1B (8 5/8" Wide, 5" Deep for 10" WF Beams) may be substituted at same price as NA1B Standard Width. Consult Distribution Equipment Catalog, Section 1640, for Catalog Numbers and Dimensions.

•Price additional features from Pages 84 and 85.

SAMPLE ESTIMATE

No. Req'd.	Breaker Amp.	No. Poles	Total Branch Poles	Price
28	20A.	1	28	\$ 0.00
2	20A.	2	4	14.40
1	30A.	3	3	8.80
1	70A.	3	3	31.80
1	NA1B-38-4L (3φ 4W)		38	726.00
Total				\$781.00



CIRCUIT BREAKER PANELBOARDS

•FACTORY ASSEMBLED TYPE

240 V. AC
125/250 V. DC

TYPE
NATB



APPLICATION: For use on AC or DC systems. Meets Federal Specification W-P-115a, Type I, Class 1. Listed by Underwriters' Laboratories.

SERVICE: 1 ϕ 2 W., 1 ϕ 3 W., 3 ϕ 3 W., 3 ϕ 4 W.
240 V. Max. AC
125 V. or 125/250 V., DC

MAINS: Distributed Phase Bussing
Main Lugs:
225 A. — 300 MCM Al or Cu Wire
400 A. — 2-500 MCM Al or Cu Wire
600 A. — 2-500 MCM Al or Cu Wire

Main Breaker:
225 A. — KA† — 300 MCM Al or Cu Wire
400 A. — LA — 2-250 MCM or 1-600 MCM Al or Cu Wire

BRANCHES: Bolt-On A1B, E Frame, rated at 10,000 A.I.C. AC or 5000 A.I.C. DC. Meet Federal Specifications W-C-375a, Class 2b and 2c.
15 - 20 A., 1, 2 and 3 Pole — #8 Al or Cu wire 60 - 100 A., 2 and 3 Pole — #0 Al or Cu wire
30 - 50 A., 1, 2 and 3 Pole — #4 Al or Cu wire

CABINETS: **MONO-FLAT** front with concealed trim clamps, door with concealed hinges and flush lock, gray baked enamel finish.
Boxes — Galvanized steel with knockouts, 20" wide, 5 $\frac{3}{4}$ " deep.

GUTTERS: Top and Bottom — 225 A. — 5" Minimum
400 A. and 600 A. — 8" Minimum
Sides — 4"

Panelboard ordering information on Page 86.

PRICING

SOLID NEUTRAL — PRICE

225 A.	400 A.	600 A.
\$31.00	\$40.00	\$57.00

BRANCH BREAKERS — PRICE PER BREAKER

Breaker Ampere Rating	1 POLE	2 POLE	3 POLE
	120 V. AC 125 V. DC	240 V. AC 125/250 V. DC	240 V. AC 125/250 V. DC
15- 60 A.	\$16.50	\$40.00	\$58.00
70-100 A.	6.00	61.00	81.00
Space Only ▲ (Per Brkr.)		8.00	10.50

BASE PRICE

No. of Poles	PRICE		
	225 A.	400 A.	600 A.

Lugs Only:

2	3		
\$67.00	\$100.00	\$128.00	
83.00	119.00	147.00	

Main Breaker:

2	3		
\$319.00 †	\$501.00		
392.00 †	597.00		

†For Q2 breaker (240 V. AC only) deduct \$22.00.

▲Includes connectors to mount future breakers.

•ADDITIONAL FEATURES

No. of Poles	PRICE		
	225 A.	400 A.	600 A.

Split Bus:

2	3		
\$32.00	\$68.00	\$81.00	
46.00	81.00	88.00	

Sub-Feed Lugs:

2	3		
\$13.30	\$40.00	\$81.00	
13.30	49.00	88.00	

Sub-Feed Circuit Breaker: (Two per Panelboard) 225 Amp. Frame KA

No. of Poles	Price Each KA Breaker	+ Max. No. of Branch Poles	Box Height	
			225A. ♦	400A. ♦
2	\$232.00*	12	35"	47"
3	290.00*	28	41"	53"
Space Only	87.00	44	47"	59"

*For Q2 breaker deduct \$85.

★For Q2 breaker deduct \$111.

♦Do not include sub-feed breaker when determining box size.
♦Main Lugs or Main Breaker.

BOX HEIGHTS (Inches) (1)

Max. No. of Poles	MAIN LUGS		MAIN BREAKER	
	225 A.	400 or 600 A.	225 A.	400 A.
30	29"	38"	41"	50"
42	35"	41"	47"	53"
54	38"	47"	..	59"
66	..	50"	..	..

①For Cat. No. of box only, prefix letters "MH" to heights shown above.
Example: MH-29.

•Price other additional features from Pages 84 and 85.

METHOD OF PRICING

1. Make listing similar to one shown at right.
2. Box sizes for panelboards without optional features may be determined from table at right. Total the number of branch circuit poles and select box from proper column in table. When optional features are required, consult Field Office for box sizes.
3. When number of poles exceeds maximum shown in table, estimate as two or more panelboards, adding sub-feed lugs as required so purchaser can cable panelboards together.
4. Insert at right of each item in listing, including solid neutral, branch circuits, mains and optional features as required, the price shown in the tables above. The total will be the price of the panelboard and cabinet.

SAMPLE ESTIMATE

No. Req'd.	Amp.	No. Poles	Total Branch Poles	Price
20	20	1	20	\$ 330.
1	30	2	2	40.
2	20	3	6	116.
1	70	3	3	81.
1	100	3	3	81.
1 Solid Neutral	225	..	..	31.
1 Main Breaker	225	..	..	392.
			Total No. of Poles	34
120/208 V., 3 ϕ 4 W. Surface Mid. Bottom Feed			Total Price	\$1071.
			Box Cat. No. MH-47	



CIRCUIT BREAKER PANELBOARDS

I-LINE®

TYPE
NH1B 277/480 V. AC

• **FACTORY ASSEMBLED TYPE**

APPLICATION: For use on AC only. Meets Federal Specification W-P-115a, Type I, Class 1 Listed by Underwriters' Laboratories.

SERVICE: 277/480 V., 3 ϕ 4 W., AC

MAINS: Distributed Phase Bussing
Main Lugs:
100 A. — 1-300 MCM Al or Cu wire
225 A. — 1-300 MCM Al or Cu wire

BRANCHES: **Standard Width**
100 A. Frame F.Y., rated at 10,000 A.I.C., AC and
FA rated at 15,000 A.I.C., AC. Meets Federal
Specifications W-C-375a, Class 2a and 2d.
F.Y., 1 Pole, 15 50 A.—#4 Al or Cu wire
FA, 2 and 3 Pole,
15 30 A.—#8 Al or Cu wire
35 100 A.—#1/0 Al or Cu wire

Main Breaker
50-100 A. — #1/0 Al or Cu wire
225 A. — 1-300 MCM Al or Cu wire

Column Width
FA, 1, 2, or 3 pole 100 A. Frame rated at 10,000
A.I.C., AC. Meets Federal Specification W-C-
375a, Class 2a.
15-30 A. — #8 Al or Cu wire
35-50 A. — #1/0 Al or Cu wire

CABINETS: **MONO-FLAT®** Front with door, gray baked
enamel finish and flush lock.
Boxes — 26" Wide, 6 1/4" Deep, galvanized steel
with knockouts and removable endwalls.

Screw cover fronts, door with continuous piano hinge
and flush lock, gray baked enamel finish.
Boxes — Finished in gray baked enamel with remov-
able endwalls, 8 5/8" wide x 5 1/8" deep.

GUTTERS: Top and Bottom — 6 1/2" Minimum (225 A. Mains)
— 8" Minimum (400 A. Mains)
Side — 4" Minimum
Top and Bottom — 5" minimum
Left Side — 2"

Panelboard ordering information on Page 86.



Type NH1B
225 A. Main Lugs

STANDARD WIDTH

No. Branch Poles	Mains Rating	Catalog Number	Price	Box Cat. No.	Front Cat. No.
MAINS: LUGS ONLY					
8	100	NH1B-08-4L	\$252.	HC-2636B	HC-2636C†
10	100	NH1B-10-4L	292.	HC-2636B	HC-2636C†
12	100	NH1B-12-4L	332.	HC-2636B	HC-2636C†
14	100	NH1B-14-4L	372.	HC-2636B	HC-2636C†
16	100	NH1B-16-4L	412.	HC-2636B	HC-2636C†
18	100	NH1B-18-4L	452.	HC-2636B	HC-2636C†
20	100	NH1B-20-4L	492.	HC-2645B	HC-2645C†
22	100	NH1B-22-4L	532.	HC-2645B	HC-2645C†
24	100	NH1B-24-4L	572.	HC-2645B	HC-2645C†
26	100	NH1B-26-4L	612.	HC-2645B	HC-2645C†
28	100	NH1B-28-4L	652.	HC-2645B	HC-2645C†
30	100	NH1B-30-4L	692.	HC-2645B	HC-2645C†
32	225	NH1B-32-4L	739.	HC-2654B	HC-2654C†
34	225	NH1B-34-4L	779.	HC-2654B	HC-2654C†
36	225	NH1B-36-4L	819.	HC-2654B	HC-2654C†
38	225	NH1B-38-4L	859.	HC-2654B	HC-2654C†
40	225	NH1B-40-4L	899.	HC-2654B	HC-2654C†
42	225	NH1B-42-4L	939.	HC-2654B	HC-2654C†

MAINS: CIRCUIT BREAKER — 3 POLE

8	50	NH1B-08-4AB	\$ 342.	HC-2636B	HC-2636C†
10	50	NH1B-10-4AB	382.	HC-2636B	HC-2636C†
12	50	NH1B-12-4AB	422.	HC-2636B	HC-2636C†
14	50	NH1B-14-4AB	462.	HC-2645B	HC-2645C†
16	100	NH1B-16-4AB	522.	HC-2645B	HC-2645C†
18	100	NH1B-18-4AB	562.	HC-2645B	HC-2645C†
20	100	NH1B-20-4AB	602.	HC-2645B	HC-2645C†
22	100	NH1B-22-4AB	642.	HC-2645B	HC-2645C†
24	100	NH1B-24-4AB	682.	HC-2645B	HC-2645C†
26	100	NH1B-26-4AB	722.	HC-2654B	HC-2654C†
28	100	NH1B-28-4AB	762.	HC-2654B	HC-2654C†
30	100	NH1B-30-4AB	802.	HC-2654B	HC-2654C†
32	225	NH1B-32-4AB	1040.	HC-2654B	HC-2654C†
34	225	NH1B-34-4AB	1080.	HC-2654B	HC-2654C†
36	225	NH1B-36-4AB	1120.	HC-2654B	HC-2654C†
38	225	NH1B-38-4AB	1160.	HC-2663B	HC-2663C†
40	225	NH1B-40-4AB	1200.	HC-2663B	HC-2663C†
42	225	NH1B-42-4AB	1240.	HC-2663B	HC-2663C†

Price Addition for Each Two and Three Pole Breaker

Convert to equivalent number of single pole breakers as indicated below and add to the price of the panelboard as follows:

No. Poles	Breaker Ampere Rating	Equiv. No. of Single Poles	Price Addition
2	15-60 A.	3	\$33.
2	70-100 A.	3	50.
3	15-60 A.	3	34.
3	70-100 A.	3	49.

COLUMN WIDTH (Not I-LINE construction)

No. Branch Poles	Mains Rating	Catalog Number	Price	Box Cat. No.	Front Cat. No.
MAINS: LUGS ONLY					
8	100	NH1B-08-4LX	\$ 252.	HX-835B	HX-835TS
10	100	NH1B-10-4LX	292.	HX-835B	HX-835TS
12	100	NH1B-12-4LX	332.	HX-835B	HX-835TS
14	100	NH1B-14-4LX	372.	HX-844B	HX-844TS
16	100	NH1B-16-4LX	412.	HX-844B	HX-844TS
18	100	NH1B-18-4LX	452.	HX-844B	HX-844TS
20	100	NH1B-20-4LX	492.	HX-853B	HX-853TS
22	100	NH1B-22-4LX	532.	HX-853B	HX-853TS
24	100	NH1B-24-4LX	572.	HX-853B	HX-853TS
26	100	NH1B-26-4LX	612.	HX-862B	HX-862TS
28	100	NH1B-28-4LX	652.	HX-862B	HX-862TS
30	100	NH1B-30-4LX	692.	HX-862B	HX-862TS
32	225	NH1B-32-4LX	739.	HX-871B	HX-871TS
34	225	NH1B-34-4LX	779.	HX-871B	HX-871TS
36	225	NH1B-36-4LX	819.	HX-871B	HX-871TS
38	225	NH1B-38-4LX	859.	HX-880B	HX-880TS
40	225	NH1B-40-4LX	899.	HX-880B	HX-880TS
42	225	NH1B-42-4LX	939.	HX-880B	HX-880TS

MAINS: CIRCUIT BREAKER — 3 POLE

6	50	NH1B-06-4ABX	\$ 302.	HX-835B	HX-835TS
8	50	NH1B-08-4ABX	342.	HX-844B	HX-844TS
10	50	NH1B-10-4ABX	382.	HX-844B	HX-844TS
12	50	NH1B-12-4ABX	422.	HX-844B	HX-844TS
14	100	NH1B-14-4ABX	462.	HX-853B	HX-853TS
16	100	NH1B-16-4ABX	522.	HX-853B	HX-853TS
18	100	NH1B-18-4ABX	562.	HX-853B	HX-853TS
20	100	NH1B-20-4ABX	602.	HX-862B	HX-862TS
22	100	NH1B-22-4ABX	642.	HX-862B	HX-862TS
24	100	NH1B-24-4ABX	682.	HX-862B	HX-862TS
26	100	NH1B-26-4ABX	722.	HX-871B	HX-871TS
28	100	NH1B-28-4ABX	762.	HX-871B	HX-871TS
30	100	NH1B-30-4ABX	802.	HX-871B	HX-871TS
32	225	NH1B-32-4ABX	1040.	HX-880B	HX-880TS
34	225	NH1B-34-4ABX	1080.	HX-880B	HX-880TS
36	225	NH1B-36-4ABX	1120.	HX-880B	HX-880TS
38	225	NH1B-38-4ABX	1160.	HX-889B	HX-889TS
40	225	NH1B-40-4ABX	1200.	HX-889B	HX-889TS
42	225	NH1B-42-4ABX	1240.	HX-889B	HX-889TS

(†) Add "S" for surface, add "F" for flush.

Space Only — When space only for future branches is required, figure panelboard on basis of total number of branches including the future branches and deduct \$14.00 for each breaker pole omitted. Connectors are included in column width panelboards.

Cable Troughs and Pull Boxes can be furnished with column width panelboards. Refer to Page 62 for catalog numbers and prices.

• Price additional features from Pages 84 and 85.



CIRCUIT BREAKER PANELBOARDS

I-LINE®

• **FACTORY ASSEMBLED TYPE**

480 V. AC

**TYPE
NH1B**



Type NH1B
225 A. Main Breaker

APPLICATION: For use on AC only. Meets Federal Specification W-P-115a, Type I, Class I. Listed by Underwriters' Laboratories.

SERVICE: 1 ϕ 2 W., 1 ϕ 3 W., 3 ϕ 3 W., 3 ϕ 4 W.
480 V., AC Max.

MAINS: Distributed Phase Bussing
Main Lugs:
100 A. — 1-300 MCM Al or Cu wire
225 A. — 1-300 MCM Al or Cu wire
400 A. — 2-600 MCM Al or Cu wire

Main Breaker:
100 A. — #1/0 Al or Cu wire
225 A. — 1-300 MCM Al or Cu wire
400 A. — 2-250 MCM or 1-600 MCM Al or Cu wire

BRANCHES: 100 A. Frame, FY, rated at 10,000 A.I.C., AC and FA rated at 15,000 A.I.C., AC. Meet Federal Specifications W-C-375a, Class 2a and 2d.
FY, 1 Pole, 15 — 50 A.—#4 Al or Cu wire
FA, 2 and 3 Pole, 15 — 30 A.—#8 Al or Cu wire
35 — 100 A.—#1/0 Al or Cu wire

CABINETS: **MONO-FLAT®** fronts with door, gray baked enamel finish and flush lock.
Boxes — 26" Wide, 6 1/4" Deep, galvanized steel with knockouts and removable endwalls.

GUTTERS: Top and Bottom — 225 A. Mains or less — 6 1/2" Minimum
— 400 A. Mains — 8" Minimum
Sides — 4" Minimum

Panelboard ordering information on Page 86.

PRICING

SOLID NEUTRAL — PRICE

100 A. or Less	▲Height	225 A.	▲Height	400 A.	▲Height
\$24.00		\$31.00		\$40.00	

BRANCH BREAKERS — PRICE PER BREAKER

Breaker Ampere Rating	1 POLE		2 POLE		3 POLE	
	277 V. AC	H	480 V. AC	H	480 V. AC	H
15-60	\$20.00	1 1/2	\$73.00	4 1/2	\$ 94.00	4 1/2
70-100	37.00	1 1/2	90.00	4 1/2	109.00	4 1/2
Space Only (Per Brkr.)	7.00	1 1/2	8.00	4 1/2	10.50	4 1/2

BASE PRICE

No. of Poles	100 A.		225 A.		400 A.	
	Price	H	Price	H	Price	H

Lugs Only:

2	\$64.00	†	\$74.00	†	\$100.00	†
3	78.00	†	90.00	†	119.00	†

Main Breaker:

2	\$157.00*	†	\$319.00*	†	\$501.00*	†
3	189.00*	†	392.00*	†	597.00*	†

*100 Amp. frame (FA)

†400 Amp. frame (LA)

▲No additional height required. Mounted in main lug compartment.

†Height dimension not required. Panelboard height determined by total branch breaker mounting space and mains rating.

‡225 Amp. frame (KA)

METHOD OF PRICING

1. Make listing similar to one shown at right. Include required branch breakers and spaces for future branches.
2. Insert at right of each branch breaker and space in listing, the required mounting space (H as shown above). Total the required branch breaker mounting space.
3. When total branch breaker mounting space exceeds maximum shown in tables at right, estimate as two or more panelboards, adding sub-feed lugs as required so purchaser can cabin panelboards together.
4. Insert at right of each item in listing the prices as shown above.
5. Panelboard height is based on required branch breaker mounting space and mains capacity.
6. Select box and front catalog numbers from main lugs or main breaker cabinet tables at right.

For front catalog numbers, add suffix letters "CF" or "CS" in place of suffix letter "B".

• Price additional features from Pages 84 and 85.

CABINET DIMENSIONS

Box Size 26" Wide, 6 1/4" Deep. FY, FA and FH Branches only

MAINS: LUGS ONLY

Total Breaker Mounting Space (Inches)	Maximum Main Lugs Rating	Box Catalog Number	Box Height (Inches)
27	400	HC-2636-B	36
45	400	HC-2645-B	45
63	400	HC-2654-B	54
81	400	HC-2663-B	63
99	400	HC-2672-B	72
135	400	HC-2690-B	90

MAINS: CIRCUIT BREAKER — 2 or 3 POLE

Total Breaker Mounting Space (Inches)	Maximum Main Breaker Rating	Box Catalog Number	Box Height (Inches)
18	225	HC-2636-B	36
36	225	HC-2645-B	45
54	225	HC-2654-B	54
63	225	HC-2663-B	63
90	225	HC-2672-B	72
126	225	HC-2690-B	90
27	400	HC-2645-B	45
45	400	HC-2654-B	54
63	400	HC-2663-B	63
81	400	HC-2672-B	72
117	400	HC-2690-B	90

NOTE: Main breakers are vertically mounted.

SAMPLE ESTIMATE 277/480V., AC 3 ϕ 4W. SERVICE 225 A. MAIN LUGS

No. Req'd.	Amp. Rating	No. Poles	Brkr.	Branch Mounting Space	Price Each	Total Price
2	15	1	FY	3"	\$ 20.	\$ 40.
2	20	1	FY	3"	20.	40.
1	20	3	FA	4 1/2"	94.	94.
2	30	3	FA	9"	94.	188.
1	70	3	FA	4 1/2"	109.	109.
2	15	1	Space	3"	7.	14.
Total Branch Space					27"	
225 A. Main Lugs					90.	90.
225 A. Solid Neutral					31.	31.
Total Mounting Space					27"	

Nearst breaker mounting space — 27"
Cabinet — Catalog No. HC-2636-B.

Total Price \$606.



CIRCUIT BREAKER DISTRIBUTION PANELBOARDS

I-LINE®

250 V. AC or DC
600 V. AC

UNASSEMBLED TYPE
MAXIMUM 1200A MAINS
MAXIMUM 800A BRANCH

APPLICATION: For use on AC or DC systems. Meets Federal Specification W-P-115a, Type I, Class 1. Listed by Underwriters' Laboratories.
Service Entrance approved with six circuits or less or with Main Breaker.

SERVICE: Distributed Phase Bussing
1 ϕ 2W, 1 ϕ 3W, 3 ϕ 3W, 3 ϕ 4W
600 V. Max. AC 250 V. Max. DC

BRANCHES: Plug-on FA, FH, FY, Q2, Q2-H, KA, KH, LA, LH, MA, and MH
Meet Federal Specifications W-C-375a, Class 2a and 2d.
15 — 100 A. — 1 Pole
15 — 800 A. — 2 and 3 Pole

MAINS: Main Lugs:
225 A. — 1-300 MCM Al or Cu wire
400 A. & 600 A. — 2-600 MCM Al or Cu wire
800 A. — 3-600 MCM Al or Cu wire
1200 A. — 4-600 MCM Al or Cu wire
Main Breaker:
100 A. — #1/0 Al or Cu wire
225 A. — 1-300 MCM Al or Cu wire
400 A. — 1-600 MCM or 2-250 MCM Al or Cu wire
600 A. & 800 A. — 3-500 MCM Al or Cu wire

CABINETS: Fronts with door, gray baked enamel finish.
Boxes: 26" Wide, 6 1/4" Deep
Galvanized steel with knockouts.
32" Wide, 8" Deep
41" Wide, 8" Deep — 400 A., 600 A. & 800 A. Mains
41" Wide, 9 1/4" Deep — 1200 A. Mains
Without knockouts, gray baked enamel finish.

GUTTERS: Mains — Refer to Page 75.
Sides — Maximum Q2 Breaker — 4" Minimum.
Maximum MA Breaker — 10" Minimum.

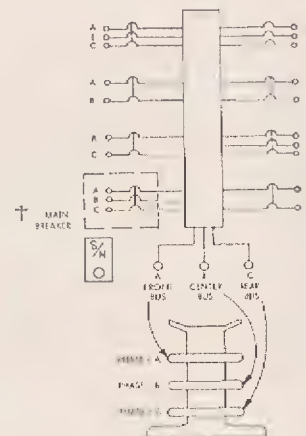


Type HCN
400 A. Main Lugs

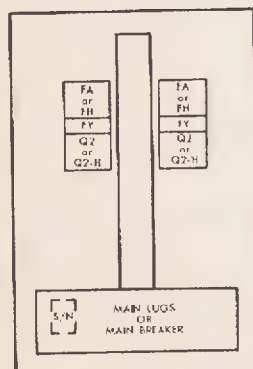
SELECTION OF COMPONENTS

1. List required circuits (ampere rating, voltage and poles).
2. Select catalog numbers of branch circuit breakers from Page 71 and determine total breaker mounting space required. Include mounting space for future circuit additions. NOTE: Branch circuit breakers of different types may be mounted opposite each other. See Breaker Mounting Combinations below. SINGLE PHASE and THREE PHASE "Wye" and "Delta" connections are made by selecting the branch breaker phase connections (i.e. — 1 ϕ , 2W and 1 ϕ , 3W applications use A ϕ and C ϕ connections only). See diagram at right.
3. Select Main Lugs Interior or Main Breaker Interior† catalog number based on required branch mounting space and mains rating from Page 72 or 73.
4. Select catalog number of Solid Neutral, if required, from table on Page 73. No additional panel height is required to mount solid neutral.
5. Select blanks to fill branch mounting space not filled by branch breakers from table on Page 73.
6. Select Box and Front catalog numbers which correspond with interior catalog numbers listed on Pages 72 and 73. Complete front catalog number by adding F for flush mounting or S for surface mounting.

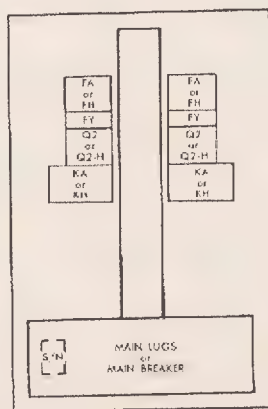
† If desired, Main Breaker may be back-fed breaker mounted as a branch in main lugs interior.



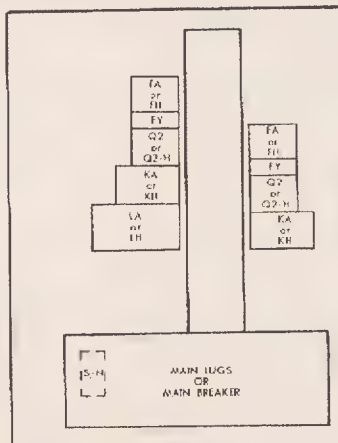
BREAKER MOUNTING COMBINATIONS



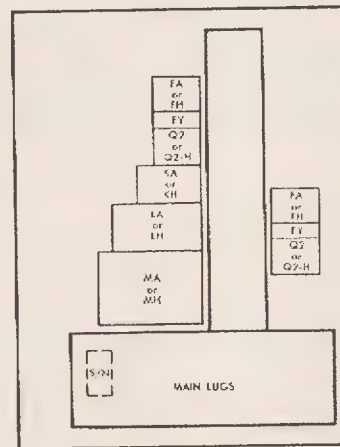
Type HCN
600A. Max. Main Lugs
400A. Max. Main Breaker
Box Size: 26" Wide, 6 1/4" Deep



Type HCM
800A. Max. Main Lugs
800A. Max. Main Breaker
Box Size: 32" Wide, 8" Deep



Type HCW
800A. Max. Main Lugs
800A. Max. Main Breaker
Box Size: 41" Wide, 8" Deep



Type HCWM
1200A. Main Lugs
Box Size: 41" Wide, 9 1/4" Deep

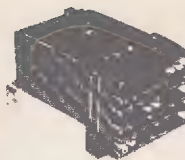


CIRCUIT BREAKER DISTRIBUTION PANELBOARDS

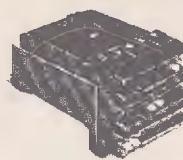
I-LINE®



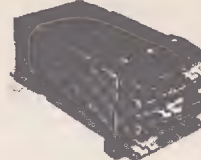
FY, 1-Pole
15-100 Amp.



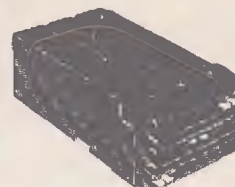
FA, 1, 2 and 3-Pole
15-100 Amp.



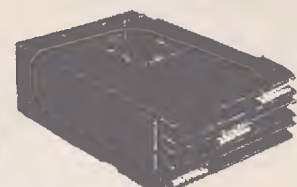
Q2, 2 and 3-Pole
125-225 Amp.



KA, 2 and 3-Pole
125-225 Amp.



LA, 2 and 3-Pole
250-400 Amp.



MA, 2 and 3-Pole
500-800 Amp.

* I-LINE PLUG-ON BRANCH CIRCUIT BREAKERS

★ Ampere Rating	Ht. (In.)	1 Pole				2 Pole				3 Pole			
		Standard Breaker		1-75,000 Breaker		Standard Breaker		1-75,000 Breaker		Standard Breaker		1-75,000 Breaker	
		† Catalog Number	Price	† Catalog Number	Price	† Catalog Number	Price	† Catalog Number	Price	† Catalog Number	Price	† Catalog Number	Price

FA AND FY 100 AMPERE FRAME 240 VOLT AC													
15	1 1/2	*FY-12015(-)	\$ 14.			*FA-22015(-)	\$ 40.			4 1/2	FA-32015	\$ 58.	
20	1 1/2	*FY-12020(-)	14.			*FA-22020(-)	40.			4 1/2	FA-32020	58.	
30	1 1/2	*FY-12030(-)	14.			*FA-22030(-)	40.			4 1/2	FA-32030	58.	
40	1 1/2	*FY-12040(-)	14.			*FA-22040(-)	40.			4 1/2	FA-32040	58.	
50	1 1/2	*FY-12050(-)	14.			*FA-22050(-)	40.			4 1/2	FA-32050	58.	
60	1 1/2	*FY-12060(-)	14.			*FA-22060(-)	40.			4 1/2	FA-32060	58.	
70	1 1/2	*FY-12070(-)	27.			*FA-22070(-)	62.			4 1/2	FA-32070	79.	
90	1 1/2	*FY-12090(-)	27.			*FA-22090(-)	62.			4 1/2	FA-32090	79.	
100	1 1/2	*FY-12100(-)	27.			*FA-22100(-)	62.			4 1/2	FA-32100	79.	

*Rated 125 V. AC or DC.

† Rated 125/250 V. DC or 240 V. AC.

FA AND FY 100 AMPERE FRAME 480 VOLT AC													
15	1 1/2	*FY-14015(-)	\$ 15.			*FA-24015(-)	\$ 87.			4 1/2	FA-34015	\$ 84.	
20	1 1/2	*FY-14020(-)	15.			*FA-24020(-)	87.			4 1/2	FA-34020	84.	
30	1 1/2	*FY-14030(-)	15.			*FA-24030(-)	87.			4 1/2	FA-34030	84.	
40	1 1/2	*FY-14040(-)	15.			*FA-24040(-)	87.			4 1/2	FA-34040	84.	
50	1 1/2	*FY-14050(-)	16.			*FA-24050(-)	87.			4 1/2	FA-34050	84.	
60	1 1/2	*FY-14060(-)	16.			*FA-24060(-)	87.			4 1/2	FA-34060	84.	
70	1 1/2	*FY-14070(-)	31.			*FA-24070(-)	84.			4 1/2	FA-34070	101.	
90	1 1/2	*FY-14090(-)	31.			*FA-24090(-)	84.			4 1/2	FA-34090	101.	
100	1 1/2	*FY-14100(-)	31.			*FA-24100(-)	84.			4 1/2	FA-34100	101.	

FA AND FH 100 AMPERE 600 VOLT AC 250VOLT DC														
15	1 1/2	▲FA-16015(-)	\$ 35.	▲FH-16015(-)	\$ 50.	FA-26015(-)	\$ 79.	FH-26015(-)	\$122.	4 1/2	FA-36015	\$ 98.	FH-36015	\$145.
20	1 1/2	▲FA-16020(-)	35.	▲FH-16020(-)	50.	FA-26020(-)	79.	FH-26020(-)	122.	4 1/2	FA-36020	98.	FH-36020	145.
30	1 1/2	▲FA-16030(-)	35.	▲FH-16030(-)	50.	FA-26030(-)	79.	FH-26030(-)	122.	4 1/2	FA-36030	98.	FH-36030	145.
40	1 1/2	▲FA-16040(-)	35.	▲FH-16040(-)	50.	FA-26040(-)	79.	FH-26040(-)	122.	4 1/2	FA-36040	98.	FH-36040	145.
50	1 1/2	▲FA-16050(-)	35.	▲FH-16050(-)	50.	FA-26050(-)	79.	FH-26050(-)	122.	4 1/2	FA-36050	98.	FH-36050	145.
60	1 1/2	▲FA-16060(-)	35.	▲FH-16060(-)	50.	FA-26060(-)	79.	FH-26060(-)	122.	4 1/2	FA-36060	98.	FH-36060	145.
70	1 1/2	▲FA-16070(-)	42.	▲FH-16070(-)	56.	FA-26070(-)	96.	FH-26070(-)	143.	4 1/2	FA-36070	117.	FH-36070	163.
90	1 1/2	▲FA-16090(-)	42.	▲FH-16090(-)	56.	FA-26090(-)	96.	FH-26090(-)	143.	4 1/2	FA-36090	117.	FH-36090	163.
100	1 1/2	▲FA-16100(-)	42.	▲FH-16100(-)	56.	FA-26100(-)	96.	FH-26100(-)	143.	4 1/2	FA-36100	117.	FH-36100	163.

▲ Rated 277 V. AC

Q2 AND Q2-H 225 AMPERE FRAME 240 VOLT AC													
125			4	Q2-22125(-)	\$137.	± Q2-22125-H(-)	\$163.	4 1/2	Q2-22125(-)	\$157.	± Q2-32125-H(-)	\$199.	
150			4 1/2	Q2-22150(-)	197.	± Q2-22150-H(-)	163.	4 1/2	Q2-22150(-)	157.	± Q2-32150-H(-)	199.	
175			4 1/2	Q2-22175(-)	131.	± Q2-22175-H(-)	163.	4 1/2	Q2-22175(-)	157.	± Q2-32175-H(-)	199.	
200			4 1/2	Q2-22200(-)	131.	± Q2-22200-H(-)	163.	4 1/2	Q2-22200(-)	157.	± Q2-32200-H(-)	199.	
225			4 1/2	Q2-22225(-)	131.	± Q2-22225-H(-)	163.	4 1/2	Q2-22225(-)	157.	± Q2-32225-H(-)	199.	

± Rated 18,000 A.I.C. AC R.M.S. SYM.

KA AND KH 225 AMPERE FRAME 600 VOLT AC 250 VOLT DC													
125			4 1/2	KA-26125(-)	\$215.	KH-26125(-)	\$502.	4 1/2	KA-36125	\$264.	KH-36125	\$806.	
150	..		4 1/2	KA-26150(-)	215.	KH-26150(-)	502.	4 1/2	KA-36150	264.	KH-36150	806.	
175	..		4 1/2	KA-26175(-)	215.	KH-26175(-)	502.	4 1/2	KA-36175	264.	KH-36175	806.	
200	..		4 1/2	KA-26200(-)	215.	KH-26200(-)	502.	4 1/2	KA-36200	264.	KH-36200	806.	
225	..		4 1/2	KA-26225(-)	215.	KH-26225(-)	502.	4 1/2	KA-36225	264.	KH-36225	806.	

LA AND LH 400 AMPERE FRAME 600 VOLT AC 250 VOLT DC													
250	6	LA-26250(-)	\$373.	LH-26250(-)	\$667.	6	LA-36250	\$457.	LH-36250	\$802.			
300	6	LA-26300(-)	373.	LH-26300(-)	667.	6	LA-36300	457.	LH-36300	802.			
350	6	LA-26350(-)	373.	LH-26350(-)	667.	6	LA-36350	457.	LH-36350	802.			
400	6	LA-26400(-)	373.	LH-26400(-)	667.	6	LA-36400	457.	LH-36400	802.			

MA AND MH 800 AMPERE FRAME 600 VOLT AC 250 VOLT DC													
500				9	MA-26500(-)	\$850.	MH-26500(-)	\$811.	9	MA-36500	\$803.	MH-36500	\$975.
600				9	MA-26600(-)	650.	MH-26600(-)	811.	9	MA-36600	803.	MH-36600	975.
700				9	MA-26700(-)	819.	MH-26700(-)	993.	9	MA-36700	1047.	MH-36700	1242.
800				9	MA-26800(-)	819.	MH-26800(-)	993.	9	MA-36800	1047.	MH-36800	1242.

† 1 and 2 Pole Breaker Catalog Numbers are completed by adding the required phase connection letters as a suffix to the circuit breakers listed in the table above.

Example: 30A, 240 volt breakers required in phase connections and number of poles as shown.

Phase Connection	1 Pole	2 Pole	3 Pole
† A	FY-12030-A		
† B	FY-12030-B		
† C	FY-12030-C		
A-B		FA-22030-AB	
† A-C		FA-22030-AC	
B-C		FA-22030-BC	
A-B-C			FA-32030

† Standard for single phase panelboards.

★ Additional branch ampere ratings in accordance with the 1968 National Electrical Code are available. Refer to numerical listing for prices.

Bolt-on branch breakers are available at no additional cost. Add letter B to catalog number prefix (i.e. FYB-) on order. Not available on MA branch breakers.

FA, KA, LA and MA branch breakers are available with auxiliary devices. See Page 47 for listing and price addition. All auxiliary devices factory installed only.

CIRCUIT BREAKER INTERRUPTING CAPACITY — See Page 44.



CIRCUIT BREAKER DISTRIBUTION PANELBOARDS

I-LINE®

UNASSEMBLED TYPE MAXIMUM 1200 A. MAIN LUGS

INTERIORS, BOXES AND FRONTS (Without solid neutral)

Total Breaker Mounting Space (Inches)	▲ Max. No. of LA Breakers	† Max. No. of MA Breakers	Ampere Rating of Mains	Complete Price (Less Breakers)	Box Height (Inches)	Interior Assembly (Less Breakers)		★ Front		Box	
						Catalog Number	Price	Catalog Number	Price	Catalog Number	Price
MAXIMUM 225 AMPERE BRANCH BREAKER — FA, FH, FY, Q2 AND Q2-H											
27			225	\$178.	36	HCN-1436-2	\$111.	HC-2636-C ()	\$ 35.	HC-2636-B	\$ 32.
27			430	199.	36	HCN-1436-4	132.	HC-2636-C ()	35.	HC-2636-B	32.
27			630	220.	36	HCN-1436-6	153.	HC-2636-C ()	35.	HC-2636-B	32.
45			225	223.	45	HCN-2345-2	143.	HC-2645-C ()	41.	HC-2645-B	39.
45			430	248.	45	HCN-2345-4	168.	HC-2645-C ()	41.	HC-2645-B	39.
45			630	273.	45	HCN-2345-6	193.	HC-2645-C ()	41.	HC-2645-B	39.
63			225	267.	54	HCN-3254-2	161.	HC-2654-C ()	58.	HC-2654-B	48.
63			430	291.	54	HCN-3254-4	185.	HC-2654-C ()	58.	HC-2654-B	48.
63			630	315.	54	HCN-3254-6	209.	HC-2654-C ()	58.	HC-2654-B	48.
81			225	299.	63	*HCN-4163-2	179.	HC-2663-C ()	66.	HC-2663-B	54.
81			430	323.	63	*HCN-4163-4	203.	HC-2663-C ()	66.	HC-2663-B	54.
81			630	347.	63	*HCN-4163-6	227.	HC-2663-C ()	66.	HC-2663-B	54.
99			225	353.	72	HCN-5072-2	220.	HC-2672-C ()	74.	HC-2672-B	59.
99			430	379.	72	HCN-5072-4	246.	HC-2672-C ()	74.	HC-2672-B	59.
99			630	405.	72	HCN-5072-6	272.	HC-2672-C ()	74.	HC-2672-B	59.
135			225	444.	90	HCN-6890-2	270.	HC-2690-C ()	96.	HC-2690-B	78.
135			430	469.	90	HCN-6890-4	295.	HC-2690-C ()	96.	HC-2690-B	78.
135			630	494.	90	HCN-6890-6	320.	HC-2690-C ()	96.	HC-2690-B	78.

MAXIMUM 225 AMPERE BRANCH BREAKER — FA, FH, FY, Q2, Q2-H, KA AND KH											
27			225	\$187.	38	HCM-1438-2	\$114.	HC-3238-T ()	\$ 38.	HC-3238-B	\$ 35.
27			430	220.	38	HCM-1438-4	147.	HC-3238-T ()	38.	HC-3238-B	35.
27			630	292.	38	HCM-1438-6	219.	HC-3238-T ()	38.	HC-3238-B	35.
27			800	343.	38	HCM-1438-8	270.	HC-3238-T ()	38.	HC-3238-B	35.
45			225	231.	47	HCM-2347-2	135.	HC-3247-T ()	49.	HC-3247-B	47.
45			430	264.	47	HCM-2347-4	168.	HC-3247-T ()	49.	HC-3247-B	47.
45			630	324.	47	HCM-2347-6	228.	HC-3247-T ()	49.	HC-3247-B	47.
45			800	372.	47	HCM-2347-8	276.	HC-3247-T ()	49.	HC-3247-B	47.
63			225	278.	56	HCM-3256-2	153.	HC-3256-T ()	67.	HC-3256-B	58.
63			430	310.	56	HCM-3256-4	185.	HC-3256-T ()	67.	HC-3256-B	58.
63			630	364.	56	HCM-3256-6	239.	HC-3256-T ()	67.	HC-3256-B	58.
63			800	420.	56	HCM-3256-8	295.	HC-3256-T ()	67.	HC-3256-B	58.
99			225	372.	74	HCM-5074-2	189.	HC-3274-T ()	95.	HC-3274-B	88.
99			430	403.	74	HCM-5074-4	220.	HC-3274-T ()	95.	HC-3274-B	88.
99			630	433.	74	HCM-5074-6	250.	HC-3274-T ()	95.	HC-3274-B	88.
99			800	503.	74	HCM-5074-8	320.	HC-3274-T ()	95.	HC-3274-B	88.
135			225	479.	92	HCM-6892-2	247.	HC-3292-T ()	120.	HC-3292-B	112.
135			430	512.	92	HCM-6892-4	280.	HC-3292-T ()	120.	HC-3292-B	112.
135			630	542.	92	HCM-6892-6	310.	HC-3292-T ()	120.	HC-3292-B	112.
135			800	623.	92	HCM-6892-8	391.	HC-3292-T ()	120.	HC-3292-B	112.

MAXIMUM 400 AMPERE BRANCH BREAKER — FA, FH, FY, Q2, Q2-H, KA, KH, LA AND LH											
27	2		400	\$248.	44	HCW-1444-4	\$147.	HCS-4144-T ()	\$ 57.	HC-4144-B	\$ 44.
27	2		600	320.	44	HCW-1444-6	219.	HCS-4144-T ()	57.	HC-4144-B	44.
27	2		800	418.	44	HCW-1444-8	317.	HCS-4144-T ()	57.	HC-4144-B	44.
45	3		400	295.	53	HCW-2353-4	182.	HCS-4153-T ()	64.	HC-4153-B	49.
45	3		600	357.	53	HCW-2353-6	244.	HCS-4153-T ()	64.	HC-4153-B	49.
45	3		800	453.	53	HCW-2353-8	340.	HCS-4153-T ()	64.	HC-4153-B	49.
63	5		400	343.	62	HCW-3262-4	208.	HCS-4162-T ()	77.	HC-4162-B	58.
63	5		600	408.	62	HCW-3262-6	273.	HCS-4162-T ()	77.	HC-4162-B	58.
63	5		800	487.	62	HCW-3262-8	352.	HCS-4162-T ()	77.	HC-4162-B	58.
99	8		400	429.	80	HCW-5080-4	252.	HCS-4180-T ()	100.	HC-4180-B	77.
99	8		600	475.	80	HCW-5080-6	298.	HCS-4180-T ()	100.	HC-4180-B	77.
99	8		800	570.	80	HCW-5080-8	393.	HCS-4180-T ()	100.	HC-4180-B	77.

MAXIMUM 800 AMPERE BRANCH BREAKER — FA, FH, FY, Q2, Q2-H, KA, KH, LA, LH, MA AND MH											
27		1	1200	\$595.	44	HCWM-1444-12N	\$494.	HC-4144-TS	\$ 57.	HC-4144-DB	\$ 44.
45		2	1200	669.	53	HCWM-2353-12N	556.	HC-4153-TS	64.	HC-4153-DB	49.
63		3	1200	681.	62	HCWM-3262-12N	546.	HC-4162-TS	77.	HC-4162-DB	58.
99		5	1200	747.	80	HCWM-5080-12N	570.	HC-4180-TS	100.	HC-4180-DB	77.

▲ Denotes number of LA and LAH breakers which can be mounted in panelboard.

★ Select Front required adding Suffix "F" for flush mounting or "S" for surface mounting.

Ⓔ Solid neutral included in Interior Assembly. When solid neutral is not required, subtract \$81. and omit suffix letter "N" from catalog number.

† Denotes number of MA and MH breakers which can be mounted on one side of interior only. KA, KH, LA and LH breakers may be combined with MA and MH breakers in 1200 A. interiors. All mount on one side of interior only.

* Availability to be announced.

NOTE: MA and MH breakers can be mounted only in 1200 A. interiors.



CIRCUIT BREAKER DISTRIBUTION PANELBOARDS

UNASSEMBLED TYPE MAXIMUM 800 A. MAIN BREAKER •VERTICALLY MOUNTED - 3 POLE

I-LINE®

INTERIORS (Including Main Breaker), BOXES AND FRONTS (Without Solid Neutral)

Total Breaker Mounting Space (Inches)	▲Max. No. of LA Brkrs.	Ampere Rating of Mains	Complete Price (Less Brkrs.)	Box Height (Inches)	Interior Assembly (Loss Breakers)		★Front		Box	
					Catalog Number	Price	Catalog Number	Price	Catalog Number	Price
MAXIMUM 225 A. BRANCH BREAKER — FA, FH, FY, Q2 and Q2-H										
					BOX SIZE 26" WIDE, 6 1/4" DEE					
18		100	\$309.	36	HCN-0936-1M	\$242.	HC-2636-C()	\$ 35.	HC-2636-B	\$ 32.
18		225	463.	36	HCN-0936-2M	396.	HC-2636-C()	35.	HC-2636-B	32.
27		400	657	45	HCN-1445-4M	577.	HC-2645-C()	41.	HC-2645-B	39.
36		100	354.	45	HCN-1845-1M	274.	HC-2645-C()	41.	HC-2645-B	39.
36		225	508.	45	HCN-1845-2M	428.	HC-2645-C()	41.	HC-2645-B	39.
45		400	719.	54	HCN-2354-4M	613.	HC-2654-C()	58.	HC-2654-B	48.
54		100	399.	54	HCN-2754-1M	293.	HC-2654-C()	58.	HC-2654-B	48.
54		225	553.	54	HCN-2754-2M	447.	HC-2654-C()	58.	HC-2654-B	48.
63		225	558.	63	HCN-3263-2M	438.	HC-2663-C()	66.	HC-2663-B	54.
63		400	764.	63	HCN-3263-4M	644.	HC-2663-C()	66.	HC-2663-B	54.
81		400	794.	72	HCN-4172-4M	661.	HC-2672-C()	74.	HC-2672-B	59.
90		00	497.	72	HCN-4572-1M	364.	HC-2672-C()	74.	HC-2672-B	59.
90		225	639.	72	HCN-4572-2M	506.	HC-2672-C()	74.	HC-2672-B	59.
117		400	890.	90	HCN-5990-4M	716.	HC-2690-C()	96.	HC-2690-B	78.
126		100	575.	90	HCN-6390-1M	401.	HC-2690-C()	96.	HC-2690-B	78.
126		225	730.	90	HCN-6390-2M	556.	HC-2690-C()	96.	HC-2690-B	78.

MAXIMUM 225 AMPERE BRANCH BREAKER — FA, FH, FY, Q2, Q2-H, KA AND KH

					BOX SIZE 32" WIDE, 8" DEEP					
18		225	\$472.	38	HCM-0938-2M	\$399.	HC-3238-T()	\$ 38.	HC-3238-B	\$ 35.
27		400	744.	47	HCM-1447-4M	648.	HC-3247-T()	49.	HC-3247-B	47.
36		225	516.	47	HCM-1847-2M	420.	HC-3247-T()	49.	HC-3247-B	47.
36		600	1199.	56	HCM-1856-6M	1074.	HC-3256-T()	67.	HC-3256-B	58.
36		800	1506.	56	HCM-1856-8M	1381.	HC-3256-T()	67.	HC-3256-B	58.
45		400	789.	56	HCM-2356-4M	664.	HC-3256-T()	67.	HC-3256-B	58.
54		225	564.	56	HCM-2756-2M	439.	HC-3256-T()	67.	HC-3256-B	58.
72		600	1269.	74	HCM-3674-6M	1086.	HC-3274-T()	95.	HC-3274-B	88.
72		800	1589.	74	HCM-3674-8M	1406.	HC-3274-T()	95.	HC-3274-B	88.
81		400	914.	74	HCM-4174-4M	731.	HC-3274-T()	95.	HC-3274-B	88.
90		225	689.	74	HCM-4574-2M	506.	HC-3274-T()	95.	HC-3274-B	88.
108		600	1377.	92	HCM-5492-6M	1145.	HC-3292-T()	120.	HC-3292-B	112.
108		800	1709.	92	HCM-5492-8M	1477.	HC-3292-T()	120.	HC-3292-B	112.
117		400	993.	92	HCM-5992-4M	761.	HC-3292-T()	120.	HC-3292-B	112.
126		225	766.	92	HCM-6392-2M	534.	HC-3292-T()	120.	HC-3292-B	112.

MAXIMUM 400 AMPERE BRANCH BREAKER — FA, FH, FY, Q2, Q2-H, KA, KH, LA AND LH

					BOX SIZE 41" WIDE, 8" DEEP					
36	3	600	\$1243.	62	HCW-1862-6M	\$1108.	HCS-4162-T()	\$ 77.	HC-4162-B	\$ 58.
36	3	800	1573.	62	HCW-1862-8M	1438.	HCS-4162-T()	77.	HC-4162-B	58.
72	6	600	1311.	80	HCW-3680-6M	1134.	HCS-4180-T()	100.	HC-4180-B	77.
72	6	800	1656.	80	HCW-3680-8M	1479.	HCS-4180-T()	100.	HC-4180-B	77.

▲ Denotes number of LA and LH breakers which can be mounted in panelboard.

● Vortically mounted 2-pole main breaker Interior Assemblies are available. Consult local Field Office for catalog numbers and price.

★ Select Front required, adding Suffix "F" for flush mounting or "S" for surface mounting.

SOLID NEUTRALS, BLANKS, SUB-FEED LUGS

*SOLID NEUTRAL ASSEMBLIES				BLANKS			BLANK EXTENSIONS		†SUB-FEED LUGS			
Ampere Capacity	±Catalog Number	◆Catalog Number	Price	Height (Inches)	Catalog Number	Price	Catalog Number	Price	Height (Inches)	Ampere Capacity	Catalog Number	Price
225	HC-2SN		\$24.00	1 1/2	HNH-1BL	\$ 2.20	HLW-1BL	\$ 1.20	4 1/2	100	SL-100	\$ 35.00
400	HC-4SN	HCW-4SN	31.00	3	HNH-3BL	3.10	HLW-3BL	1.20	4 1/2	225	SL-225	35.00
600	HC-6SN	HCW-6SN	43.00	4 1/2	HNH-4BL	4.90	HLW-4BL	1.20	6	400	SL-400	53.00
800	HC-8SN	HCW-8SN	68.00						9	800	SL-800	142.00
1200		HCW-12SN	81.00									

*No additional height required. Mounted in main lug compartment.

±For use with Type HCN and HCM Interior Assemblies.

◆For use with Type HCW and HCWM Interior Assemblies.

©For replacement only. Furnished as original equipment with Interior Assembly.

†Sub-feed lug devices plug-on bus bars in same manner as branch circuit breaker.



SCHEDULE G1 DISCOUNT

PAGE 73

CIRCUIT BREAKER DISTRIBUTION PANELBOARDS

I-LINE®

**250 V. AC or DC
600 V. AC**

• **FACTORY ASSEMBLED TYPE**

APPLICATION: For use on AC or DC systems. Meets Federal Specification W-P-115a, Type I, Class 1. Listed by Underwriters' Laboratories.
Service Entrance approved with six circuits or less or with Main Breaker

SERVICE: Distributed Phase Bussing
1φ 2W, 1φ 3W, 3φ 3W, 3φ 4W
600 V. Max. AC
250 V. Max. DC

BRANCHES: *Plug-on — FA, FH, FY, Q2, Q2-H, KA, KH, LA, LH, MA and MH
(Circuit breaker interrupting capacities and Federal Specification W.G-375a Classifications shown on Page 40).
15-100 A. — 1 Pole
15-800 A. — 2 and 3 Pole

MAINS: Main Lugs:
225 A. — 1-300 MCM Al or Cu wire
400 A. & 600 A. — 2-600 MCM Al or Cu wire
800 A. — 3-600 MCM Al or Cu wire
1200 A. — 4-600 MCM Al or Cu wire
Main Breaker:
100 A. — #10 Al or Cu wire
225 A. — 1-300 MCM Al or Cu wire
400 A. — 1-600 MCM or 2-250 MCM Al or Cu wire
600 A. & 800 A. — 3-500 MCM Al or Cu wire

CABINETS: Fronts with door, gray baked enamel finish.
Boxes: 26" Wide, 6 1/4" Deep. Galvanized steel with knockouts.
32" Wide, 8" Deep
41" Wide, 8" Deep — 400 A., 600 A. and 800 A. Mains
41" Wide, 9 1/4" Deep — 1200 A. Mains
Without knockouts, gray baked enamel finish.

GUTTERS: Main Lugs — Refer to Page 75.
Side — 5" Minimum.

Panelboard ordering information on Page 86.



Type HCM
800 A. Main Breaker

PRICING

BASE PRICE

Max. Branch Breaker	↑MAIN LUGS					↑MAIN BREAKER										▲SOLID NEUTRAL	
	225 A.	400 A.	600 A.	800 A.	△1200 A.	No. Poles	225 A.		400 A.		600 A.		800 A.		Amp. Rating	Price	
							KA	KH	LA	LH	MA	MH	MA	MH			
225 A. Q2	\$112.	\$135.	\$172.			2 3	\$342. 403.	\$635. 751.	\$618. 726.	\$ 921. 1080.					225	\$31.	
225 A. KA, KH	112.	135.	172.	\$209.		2 3	342. 403.	635. 751.	618. 726.	921. 1080.	\$ 949. 1152.	\$1150. 1368.	\$1240. 1505.	\$1516. 1755.	400	40.	
400 A. LA, LH		159.	209.	258.	\$357.	2 3					949. 1152.	1150. 1368.	1240. 1505.	1516. 1755.	600	57.	
△800 A. MA, MH					357.										800	81.	
															1200	95.	

† Height dimension not required. Panelboard height determined by total branch breaker mounting space and mains rating.

▲ No additional space required. Mounted in main lug compartment.
△ MA and MH branches mount in 1200 A. devices only.

*PLUG-ON BRANCH BREAKERS — PRICE PER BREAKER

Breaker Ampere Rating	Breaker	1 POLE					2 POLE					3 POLE				
		120 V.	277 V.	277 V.	Space Only	H	240 V.	480 V.	600 V.	Space Only	H	240 V.	480 V.	600 V.	Space Only	H
FA, FY, Q2, Q2-H, KA, LA and MA BRANCH BREAKERS																
15-60 A.	FA	\$24.	\$26.		\$ 7.	1½	\$48.	\$76.	\$ 86.	\$ 8.	4½	\$66.	\$96.	\$109.	\$11.	4½
70-100 A.	FA	37.	41.		7.	1½	69.	93.	105.	8.	4½	90.	112.	130.	11.	4½
125-225 A.	Q2						147.			11.	4½	179.			11.	4½
125-225 A.	Q2-H						216.			11.	4½	233.			11.	4½
125-225 A.	KA								232.	11.	4½			291.	11.	4½
250-400 A.	LA								401.	23.	6			498.	23.	6
500-600 A.	MA								678.	46.	9			875.	46.	9
700-800 A.	MA								882.	46.	9			1141.	46.	9

1-75,000 — FH, KH, LH and MH BRANCH BREAKERS

15-60 A.	FH			\$56.	\$ 7.	1 1/2			\$131.	\$ 8.	4 1/2			\$155.	\$11.	4 1/2
70-100 A.	FH			61.	7.	1 1/2			149.	8.	4 1/2			173.	11.	4 1/2
125-225 A.	KH								519.	11.	4 1/2			631.	11.	4 1/2
250-400 A.	LH								690.	23.	6			842.	23.	6
500-600 A.	MH								872.	46.	9			1065.	46.	9
700-800 A.	MH								1117.	46.	9			1359.	46.	9

* Plug-on branch breakers will be furnished as standard. Bolt-on branch breakers will be furnished at no additional charge when specified. Not available on MA branch breakers.

† 1 pole FY branches.

① 1 pole FY and 2 pole FA breakers are rated 125/250 V. DC.

★ 2 pole FA and 1 and 2 pole FH are rated 250 V. DC.

● Price additional features from Pages 84 and 85.

✦ Rated 18,000 A.I.C. AC R.M.S. Sym.



CIRCUIT BREAKER DISTRIBUTION PANELBOARDS

FACTORY ASSEMBLED TYPE

I-LINE®

CABINET DIMENSIONS LUGS ONLY

MAINS:

Total Breaker Mounting Space (Inches)	Maximum Main Lugs Rating	Box Catalog Number	Box Height (Inches)
FA, FH, FY, Q2 and Q2-H Breakers — Box Size 26" Wide, 6 1/4" Deep			
27	600	HC-2636-B	36
45	600	HC-2645-B	45
63	600	HC-2654-B	54
81	600	HC-2663-B	63
99	600	HC-2672-B	72
135	600	HC-2690-B	90

FA, FH, FY, Q2, Q2-H, KA and KH Breakers — Box Size 32" Wide, 8" Deep

27	800	HC-3238-B	38
45	800	HC-3247-B	47
63	800	HC-3256-B	56
99	800	HC-3274-B	74
135	800	HC-3292-B	92

FA, FH, FY, Q2, Q2-H, KA, KH, LA and LH Breakers — Box Size 41" Wide, 8" Deep

27	800	HC-4144-B	44
45	800	HC-4153-B	53
63	800	HC-4162-B	62
99	800	HC-4180-B	80

FA, FH, FY, Q2, Q2-H, KA, KH, LA, LH, MA and MH Breakers — Box Size 41" Wide, 9 1/4" Deep

27	1200	HC-4144-DB	44
45	1200	HC-4153-DB	53
63	1200	HC-4162-DB	62
99	1200	HC-4180-DB	80

CIRCUIT BREAKER 2 or 3 POLE

MAINS:

Total Breaker Mounting Space (Inches)	Maximum Main Breaker Rating	Box Catalog Number	Box Height
FA, FH, FY, Q2 and Q2-H Breakers — Box Size 26" Wide, 6 1/4" Deep			
18	225	HC-2636-B	36
36	225	HC-2645-B	45
54	225	HC-2654-B	54
63	225	HC-2663-B	63
90	225	HC-2672-B	72
126	225	HC-2690-B	90
27	400	HC-2645-B	45
45	400	HC-2654-B	54
63	400	HC-2663-B	63
81	400	HC-2672-B	72
117	400	HC-2690-B	90

FA, FH, FY, Q2, Q2-H, KA and KH Breakers — Box Size 32" Wide, 8" Deep

18	225	HC-3238-B	38
36	225	HC-3247-B	47
54	225	HC-3256-B	56
90	225	HC-3274-B	74
126	225	HC-3292-B	92
27	400	HC-3247-B	47
45	400	HC-3256-B	56
81	400	HC-3274-B	74
117	400	HC-3292-B	92

FA, FH, FY, Q2, Q2-H, KA, KH, LA and LH Breakers — Box Size 41" Wide, 8" Deep

36	800	HC-4162-B	62
72	800	HC-4180-B	80
108	800	HC-4180-B	92

NOTE: Main breakers are typically mounted.

MINIMUM GUTTER DIMENSIONS

Main Size	Main Lug	Main Breaker	Solid Neutral
225 A.	8 1/2	6 1/2	6 3/4
400 A.	8 1/2	8	6 3/4
600 A.	8 1/2	10	6 3/4
800 A.	10 1/2	10	9
1200 A.	12		12

BREAKER DATA

BRANCH BREAKER TERMINAL SIZES

Ampere Rating	Frame Size	Breaker	Wire Size	
			Copper	Aluminum
15-30 A.	100 A.	FA	#14-#8	#12-#8
35-100 A.	100 A.	FA	#8-#1/0	#8-#1/0
15-30 A.	100 A.	FH	#14-#8	#12-#8
35-100 A.	100 A.	FH	#8-#1/0	#8-#1/0
15-50 A.	100 A.	FY	#14-#4	#12-#4
60-100 A.	100 A.	FY	#6-#1/0	#4-#1/0
70-225 A.	225 A.	Q2	#4/0-300 MCM	#4/0-300 MCM
70-225 A.	225 A.	Q2-H	#4/0-300 MCM	#4/0-300 MCM
70-225 A.	225 A.	KA	#4/0-300 MCM	#4/0-300 MCM
70-225 A.	225 A.	KH	#4/0-300 MCM	#4/0-300 MCM
250-400 A.	400 A.	LA	1-#3/0-600 MCM or 2-#3/0-250 MCM	1-#3/0-600 MCM or 2-#3/0-250 MCM
250-400 A.	400 A.	LH	1-#3/0-600 MCM or 2-#3/0-250 MCM	1-#3/0-600 MCM or 2-#3/0-250 MCM
450-800 A.	800 A.	MA	1-#3/0-3-500 MCM	1-#3/0-3-500 MCM
450-800 A.	800 A.	MH	1-#3/0-3-500 MCM	1-#3/0-3-500 MCM

Note: Complete breaker data listed on Page 44.

REPLACEMENT CIRCUIT BREAKERS

To order circuit breakers only for replacement of existing branch circuits or for mounting in an existing space, refer to Page 71 for breaker Catalog Numbers and Prices.

METHOD OF PRICING

1. Make listing similar to one shown below. Include required branch breakers and spaces for future branches.
2. Insert at right of each branch breaker and space in listing the required mounting space (H as shown on Page 74). Total the required branch breaker mounting space.
- NOTE: Different type breakers may be mounted opposite each other.
3. When total branch breaker mounting space exceeds maximum shown in tables on left, estimate as two or more panelboards, adding sub-feed lugs as required so purchaser can cable panelboards together.
4. Insert at right of each item in listing the prices as shown in tables on Page 74. Include optional features as required from Pages 84 and 85. The sum will be the price of the panelboard and cabinet.
5. Panelboard height is based on required branch breaker mounting space and mains capacity.
6. Select box and front catalog numbers from main lugs or main breaker cabinet tables at left.

For front catalog numbers, add suffix letters "TF" or "TS" in place of suffix letter "B".

SAMPLE ESTIMATE 120/208 V., AC 3Ø 4W. SERVICE 600 A. MAIN LUGS

No. Req'd.	Amp. Rating	No. Poles	Type Brkr.	Branch Mounting Space	Price Each	Total Price
2	20	1	FY	3"	\$ 24.	\$ 48.
2	20	2	FA	9"	48.	96.
2	30	3	FA	9"	66.	132.
2	70	3	FA	9"	90.	180.
1	100	3	FA	4 1/2"	90.	90.
1	225	3	KA	4 1/2"	291.	291.
Total Branch Space				39"		
600 A. Main Lugs					172.	172.
600 A. Solid Neutral					57.	57.
Total Mounting Space				39"		
						Total Price \$1066.

Nearest breaker mounting space — 45"
Cabinet — Catalog No. HC-3247-B.

SCHEDULE G2 DISCOUNT



FUSIBLE LIGHTING PANELBOARDS

FOR USE WITH CLASS G FUSES
FUSES NOT FURNISHED

TYPE
NTFB

120/240 V. AC
120/208 V. AC

•FACTORY ASSEMBLED TYPE

APPLICATION: For use on AC only. Meets Federal Specification W-P-115a, Type II, Class I.
Listed by Underwriters' Laboratories.

SERVICE: 1 ϕ 3 W., 3 ϕ 4 W., AC.

MAINS: Distributed Phase Bussing

Main Lugs:

100 A. — #0 Al or Cu wire, 225 A. — 300 MCM Al or Cu wire

BRANCHES: Bolt-On Type QFSB, 1, 2 or 3 Pole Switch and Class G Fusible.

Type QFSB 15-20 A. — #8 Cu wire

CABINETS: **MONO-FLAT®** fronts with concealed trim clamps, door with concealed hinges and flush lock, gray baked enamel finish.

Boxes — Galvanized steel with knockouts, 20" Wide, 5 $\frac{3}{4}$ " Deep.

GUTTERS: Top and Bottom — 5"

Sides — 6 $\frac{1}{2}$ "

Panelboard ordering information on Page 86.



1 PHASE 3 WIRE

No. Branch Poles	Mains Rating	Catalog Number	Price	Box Cat. No.	MONO-FLAT Front Cat. No.	Box Height (Inches)
MAINS: LUGS ONLY						
8	100	NTFB-08-3L	\$124.	MH-23	MSC-23T	23
10	100	NTFB-10-3L	136.	MH-23	MSC-23T	23
12	100	NTFB-12-3L	148.	MH-23	MSC-23T	23
14	100	NTFB-14-3L	160.	MH-26	MSC-26T	26
16	100	NTFB-16-3L	172.	MH-26	MSC-26T	26
18	100	NTFB-18-3L	184.	MH-26	MSC-26T	26
20	100	NTFB-20-3L	196.	MH-26	MSC-26T	26
22	225	NTFB-22-3L	213.	MH-29	MSC-29T	29
24	225	NTFB-24-3L	225.	MH-29	MSC-29T	29
26	225	NTFB-26-3L	237.	MH-29	MSC-29T	29
28	225	NTFB-28-3L	249.	MH-29	MSC-29T	29
30	225	NTFB-30-3L	261.	MH-29	MSC-29T	29
32	225	NTFB-32-3L	273.	MH-35	MSC-35T	35
34	225	NTFB-34-3L	285.	MH-35	MSC-35T	35
36	225	NTFB-36-3L	297.	MH-35	MSC-35T	35
38	225	NTFB-38-3L	309.	MH-35	MSC-35T	35
40	225	NTFB-40-3L	321.	MH-35	MSC-35T	35
42	225	NTFB-42-3L	333.	MH-35	MSC-35T	35

Price Additions for Each Two and Three Pole Switch: To the price of the total equivalent number of single poles from above, add \$0.60 for each 2 pole and \$0.80 for each 3 pole branch.

Space Only. When space only for future branches is required, figure panelboard on basis of total number of poles, including the future branches, and deduct \$3.20 list for each single pole omitted.

3 PHASE 4 WIRE

No. Branch Poles	Mains Rating	Catalog Number	Price	Box Cat. No.	MONO-FLAT Front Cat. No.	Box Height (Inches)
MAINS: LUGS ONLY						
8	100	NTFB-08-4L	\$136.	MH-23	MSC-23T	23
10	100	NTFB-10-4L	148.	MH-23	MSC-23T	23
12	100	NTFB-12-4L	160.	MH-23	MSC-23T	23
14	100	NTFB-14-4L	172.	MH-26	MSC-26T	26
16	100	NTFB-16-4L	184.	MH-26	MSC-26T	26
18	100	NTFB-18-4L	196.	MH-26	MSC-26T	26
20	100	NTFB-20-4L	208.	MH-26	MSC-26T	26
22	100	NTFB-22-4L	220.	MH-29	MSC-29T	29
24	100	NTFB-24-4L	232.	MH-29	MSC-29T	29
26	100	NTFB-26-4L	244.	MH-29	MSC-29T	29
28	100	NTFB-28-4L	256.	MH-29	MSC-29T	29
30	100	NTFB-30-4L	268.	MH-29	MSC-29T	29
32	225	NTFB-32-4L	280.	MH-35	MSC-35T	35
34	225	NTFB-34-4L	292.	MH-35	MSC-35T	35
36	225	NTFB-36-4L	304.	MH-35	MSC-35T	35
38	225	NTFB-38-4L	316.	MH-35	MSC-35T	35
40	225	NTFB-40-4L	328.	MH-35	MSC-35T	35
42	225	NTFB-42-4L	340.	MH-35	MSC-35T	35

Column Width NTFB (8 $\frac{5}{8}$ " wide, 5" deep for 10" WF Beams) may be furnished at same price as NTFB Standard Width. Consult local Field Office for Catalog Numbers and Dimensions.

TYPE
NTHB

MAIN LUGS ONLY
277/480 V. AC

APPLICATION: For use on AC only. Meets Federal Specifications W-P-115a, Type II, Class I.
Listed by Underwriters' Laboratories.

SERVICE: 277/480 V., 3 ϕ 4 W., AC

MAINS: 100 A. and 225 A. — 300 MCM Al or Cu wire

BRANCHES: Bolt-On Type HFBS, 1 Pole Switch and Class G Fusible.

Type HFBS 15-20 A. — #8 Cu wire

CABINETS: **MONO-FLAT®** fronts with concealed trim clamps, door with concealed hinges and flush lock, gray baked enamel finish.

Boxes — Galvanized steel with knockouts, 20" Wide, 5 $\frac{3}{4}$ " Deep.

GUTTERS: Top and Bottom — 5" Minimum

Sides — 4"



3 PHASE 4 WIRE

No. Branch Poles	Mains Rating	Catalog Number	Price	Box Cat. No.	MONO-FLAT Front Cat. No.	No. Branch Poles	Mains Rating	Catalog Number	Price	Box Cat. No.	MONO-FLAT Front Cat. No.
MAINS: LUGS ONLY											
8	100	NTHB-08-4L	\$228.	MH-29	MDC-29T	26	100	NTHB-26-4L	\$534.	MH-35	MDC-35T
10	100	NTHB-10-4L	262.	MH-29	MDC-29T	28	100	NTHB-28-4L	568.	MH-35	MDC-35T
12	100	NTHB-12-4L	296.	MH-29	MDC-29T	30	100	NTHB-30-4L	602.	MH-35	MDC-35T
14	100	NTHB-14-4L	330.	MH-29	MDC-29T	32	225	NTHB-32-4L	643.	MH-35	MDC-35T
16	100	NTHB-16-4L	364.	MH-29	MDC-29T	34	225	NTHB-34-4L	677.	MH-35	MDC-35T
18	100	NTHB-18-4L	398.	MH-29	MDC-29T	36	225	NTHB-36-4L	711.	MH-35	MDC-35T
20	100	NTHB-20-4L	432.	MH-29	MDC-29T	38	225	NTHB-38-4L	745.	MH-41	MDC-41T
22	100	NTHB-22-4L	466.	MH-29	MDC-29T	40	225	NTHB-40-4L	779.	MH-41	MDC-41T
24	100	NTHB-24-4L	500.	MH-29	MDC-29T	42	225	NTHB-42-4L	813.	MH-41	MDC-41T

Space Only: When space only for future branches is required, figure panelboard on basis of total number of poles, including the future branches, and deduct \$13.90 for each single pole omitted.

Ordering Instructions: 20 ampere branch units will be furnished on both NTFB and NTHB unless otherwise specified. 15 ampere units will not accept 20 ampere fuses.

•Price additional features from Pages 84 and 85.



TELEPHONE & EQUIPMENT CABINETS

MONO-FLAT® CABINETS DIMENSIONS MATCH LIGHTING PANELBOARDS

Telephone and equipment cabinets with MONO-FLAT fronts are designed to match standard lighting panelboards in appearance, height and depth.



Two Piece Cabinet
with MONO-FLAT Front

Fronts — MONO-FLAT, code gauge steel, for flush or surface mounting with concealed trim clamps, door with concealed hinges and brushed stainless steel flush lock keyed same as lighting panelboards, gray baked enamel finish. Boxes — code gauge galvanized steel with removable blank endwalls. Boxes and fronts are UL listed. Concealed trim clamps and hinges restrict door opening to slightly smaller than screw cover type listed below.

Dimensions			Box Only		Front Only		Box & Front		★Wood Backing	
W	H	D	Cat. No.	Price	Cat. No.	Price	Wt.	Price	Cat. No.	Price
14	20 1/4	4	TC-14204B	\$19.50	TC-14204TF or TS	\$23.50	20	\$43.00	TC-1420W	\$ 4.90
18	24 1/4	4	TC-18244B	27.00	TC-18244TF or TS	33.00	31	60.00	TC-1824W	7.30
24	23	6	TC-24236B	35.00	TC-24236TF or TS	40.00	42	75.00	TC-2423W	10.00
24	26	6	TC-24266B	39.00	TC-24266TF or TS	42.00	47	81.00	TC-2426W	11.20
24	28	4	TC-24284B	34.00	TC-24284TF or TS	43.00	46	77.00	TC-2428W	12.40
24	35	4	TC-24354B	41.00	TC-24354TF or TS	44.00	72	85.00	TC-2435W	13.70
24	35	6	TC-24356B	43.00	TC-24356TF or TS	44.00	75	87.00	TC-2435W	13.70
*30	29	6	TC-30296B	47.00	*TC-30296TF or TS	58.00	78	105.00	TC-3029W	15.90
*30	32 1/2	4	TC-30324B	44.00	*TC-30324TF or TS	60.00	77	104.00	TC-3032W	17.10
*36	35	6	TC-36356B	68.00	*TC-36356TF or TS	86.00	106	154.00	TC-3635W	21.70

*Fronts have double doors with 3-point vault handle lock.

★3/4" plywood backing finished with black insulating varnish. Easily installed in field.

CABINETS WITH SCREW COVER

Telephone and equipment cabinets with screw cover are designed to provide a line of cabinets with maximum door opening for access to the cabinet interior. Top and bottom endwalls have a pattern of several 1/2" — 3/4" and two 2" combination knockouts. The separately packaged flush or surface trims have a hinged door furnished with brushed stainless steel flush lock. Boxes and trims are steel, finished with gray baked enamel and are UL listed.



Two Piece Cabinet
with Screw Cover
and Door

Dimensions			Box Only		Front Only		Box & Front		Wood Backing	
W	H	D	Cat. No.	Price	Catalog No.	Price	Wt.	Price	Cat. No.	Price
12	12	4	12124B	\$ 8.60	1212TF or TS	\$11.10	11	\$19.70	1212W	\$ 3.70
12	16	4	12164B	11.10	1216TF or TS	14.70	13	25.80	1216W	4.90
12	16	6	12166B	14.70	1216TF or TS	14.70	14	29.40	1216W	4.90
12	18	4	12184B	11.10	1218TF or TS	15.90	16	27.00	1218W	6.10
12	18	6	12186B	15.90	1218TF or TS	15.90	18	31.80	1218W	6.10
12	24	4	12244B	12.30	1224TF or TS	18.40	22	30.70	1224W	7.30
12	24	6	12246B	18.40	1224TF or TS	18.40	23	36.80	1224W	7.30
18	18	4	18184B	12.30	1818TF or TS	19.70	23	32.00	1818W	7.30
18	18	6	18186B	18.40	1818TF or TS	19.70	25	38.10	1818W	7.30
18	24	4	18244B	19.50	1824TF or TS	29.00	28	48.50	1824W	8.60
18	24	6	18246B	27.00	1824TF or TS	29.00	30	56.00	1824W	8.60
18	30	4	18304B	21.90	1830TF or TS	32.00	33	53.90	1830W	9.80
18	30	6	18306B	29.00	1830TF or TS	32.00	38	61.00	1830W	9.80
24	24	4	24244B	21.90	2424TF or TS	34.00	35	55.90	2424W	11.10
24	24	6	24246B	29.00	2424TF or TS	34.00	37	63.00	2424W	11.10
24	30	4	24304B	28.00	2430TF or TS	42.00	40	70.00	2430W	13.50
24	30	6	24306B	40.00	2430TF or TS	42.00	45	82.00	2430W	13.50
24	36	4	24364B	31.00	2436TF or TS	46.00	57	77.00	2436W	17.30
24	36	6	24366B	41.00	2436TF or TS	46.00	59	87.00	2436W	17.30
30	30	4	30304B	33.00	3030TF or TS	51.00	60	84.00	3030W	18.40
30	30	6	30306B	42.00	3030TF or TS	51.00	62	93.00	3030W	18.40
30	36	4	30364B	35.00	3036TF or TS	55.00	71	90.00	3036W	20.90
30	36	6	30366B	43.00	3036TF or TS	55.00	78	98.00	3036W	20.90
30	48	4	30484B	49.00	3048TF or TS	68.00	101	117.00	3048W	27.00
30	48	6	30486B	56.00	3048TF or TS	68.00	124	124.00	3048W	27.00
†36	48	6	36486B	84.00	†3648TF or TS	98.00	150	182.00	3648W	33.00

†Front has double doors with 3-point vault handle lock.



FUSIBLE DISTRIBUTION PANELBOARDS

TYPE
QMB

250 V. AC or DC
600 V. AC

UNASSEMBLED TYPE

APPLICATION: For use on AC or DC systems. Meets Federal Specification W-P-115a.

Type II, Class 1. Listed by Underwriters' Laboratories.

Service Entrance approved with six circuits or less or with Main Switch.

SERVICE:	250 V. 1 ϕ 2 W., AC or DC	250 V. or 600 V., 3 ϕ 3 W., AC
	125/250 V., 1 ϕ 3 W., AC	120/208 V. or 277/480 V., 3 ϕ 4 W., AC
MAINS:	Main Lugs:	Main Switch:
	200 A. — 1-300 MCM Al or Cu wire	100 A. — #0 Al or Cu wire
BRANCHES:	400 A. — 2-500 MCM Al or Cu wire	200 A. — 300 MCM Al or Cu wire
	600 A. — 2-500 MCM Al or Cu wire	
CABINETS:	Quick-make, Quick-break HP Rated Plug-On Switch Units.	
	30 A. — #8 Cu wire	100 A. — #0 Al or Cu wire
GUTTERS:	60 A. — #4 Cu wire	200 A. — 300 MCM Al or Cu wire
	Fronts — Four-piece construction, finished gray baked enamel, without door. Concealed, self-adjusting trim clamps.	
	Boxes — Without knockouts, finished gray baked enamel, 31" Wide, 10 3/8" Deep.	
	Top and Bottom — 8" Minimum (Except 32" High Box — 5 3/4")	
	Side — 6"	



TABLE 1 — PLUG-ON SWITCH UNITS*

Unit Type	Unit Ampere Rating	*250 VOLTS AC or DC						▲600 VOLTS AC or 250 VOLTS DC					
		Unit Height (Inches)	Two Pole		Three Pole		Unit Height (Inches)	Two Pole		Three Pole			
			Catalog Number	Price	Catalog Number	Price		Catalog Number	Price	Catalog Number	Price		
Branch Switches	30-30 Twin	3	QMB-203-T	\$ 43.	QMB-303-T	\$ 57.	6	QMB-2603-T	\$ 92.	QMB-3603-T	\$111.		
	60-60 Twin	4½	QMB-206-T	53.	QMB-306-T	73.	6	QMB-2606-T	92.	QMB-3606-T	111.		
	100-100 Twin	6	QMB-210-T	88.	QMB-310-T	112.	7½	QMB-2610-T	137.	QMB-3610-T	174.		
	200 Single	9	QMB-2220	106.	QMB-3220	150.	9	QMB-2620	159.	QMB-3620	205.		
Main Switch	100 A.	9	QMB-2210-M	133.	QMB-3210-M	178.	9	QMB-2610-M	179.	QMB-3610-M	233.		
	200 A.	9	QMB-2220-M	133.	QMB-3220-M	178.	9	QMB-2620-M	179.	QMB-3620-M	233.		

▲30-60, 30-100 and 60-100, 600 volt units are available from factory stock.

*Twin 250 volt units may be converted to 30-60, 30-100 and 60-100 twin units by using adaptor kits listed below.

★For 600 volt units modified to accept Class J fuses, add suffix "J" to catalog number. Refer to Page 83 for pricing.

TABLE 2 — INTERIORS, BOXES AND FRONTS (Without Solid Neutral)

± Total Unit Mounting Space (Inches)	Ampere Rating of Mains	± Box Height (Inches)	Interior Front and Box Price (Less Units)	COMPONENT ORDERING TABLES					
				INTERIOR ASSEMBLY (Less Units)		FRONT		BOX	
				Catalog No.	Price	Catalog No.	Price	Catalog No.	Price
18	200	32	\$152.	QMB-1832-2	\$ 93.	QM-3132-TS	\$24.	QM-3132-B	\$ 35.
27	200	44	181.	QMB-2744-2	95.	QM-3144-TS	33.	QM-3144-B	53.
24	400	44	200.	QMB-2444-4	114.	QM-3144-TS	33.	QM-3144-B	53.
39	200	56	213.	QMB-3956-2	100.	QM-3156-TS	43.	QM-3156-B	70.
36	400	56	250.	QMB-3656-4	137.	QM-3156-TS	43.	QM-3156-B	70.
48	400	68	291.	QMB-4868-4	150.	QM-3168-TS	53.	QM-3168-B	88.
48	600	68	330.	QMB-4868-6	189.	QM-3168-TS	53.	QM-3168-B	88.
60	600	80	409.	QMB-6080-6	219.	QM-3180-TS	76.	QM-3180-B	114.
75	200	92	406.	QMB-7592-2	187.	QM-3192-TS	90.	QM-3192-B	129.
72	600	92	480.	QMB-7292-6	261.	QM-3192-TS	90.	QM-3192-B	129.

±Solid Neutral, if required, is mounted in main lugs compartment. No additional space required.

±Box height indicated includes unit mounting space, main lug and solid neutral compartment, top and bottom gutters.

TABLE 3 — BLANKS, NEUTRAL ASSEMBLIES AND ADAPTOR KITS

BLANKS			SOLID NEUTRAL ASSEMBLIES				ADAPTOR KITS — 250 V. UNITS ONLY			
Height	Catalog Number	Price	Amp. Cap.	Height	Catalog Number	Price	To Convert One Sw.		Catalog Number	Price
							From	To		
1½	QM-1BL	\$2.20	200		QM-1SN	\$24.10	60 A.	30 A.	QMB-63-AL	\$7.30
3	QM-3BL	2.70	200		QM-2SN	24.10	100 A.	30 A.	QMB-103-AL	7.30
6	QM-6BL	2.80	400		QM-4SN	31.00	100 A.	60 A.	QMB-106-AL	7.30
9	QM-9BL	3.10	600		QM-6SN	43.00				

Q For use on Interior Catalog Number QMB-1832-2 only.

SELECTION OF COMPONENTS

1. List required circuits including main switch if desired (ampere rating and poles).

2. Select catalog numbers of switch units from Table 1 and determine total unit space.

NOTE: If solid neutral is required, select from Table 3. No additional height required.

3. Select interior, box and front from catalog numbers based on required unit space and Mains capacity from Table 2.

4. Select blanks, if required to complete unit space from Table 3.

NOTE: Two pole branch units are shipped with outside (A-C) phase connections. Center (B) phase connector furnished with unit for easy field conversion.

SAMPLE ESTIMATE 277/480 V., AC 3 ϕ 4 W. SERVICE 400 A. MAIN LUGS—SURFACE MOUNTING

Components	Unit Mounting Space	Price Each	Total Price
4— 30 A. 3P.	2—QMB-3603-T	12"	\$111.00
2— 60 A. 3P.	1—QMB-3606-T	6"	\$11.00
4—100 A. 3P.	2—QMB-3610-T	15"	\$174.00
1—200 A. 3P.	1—QMB-3620	9"	\$205.00
1—400 A. S/N	1—QM-4SN		\$31.00
			\$31.00
1—6" Blank	1—QM-6BL	42"	
		6"	2.60
1—48" Interior	1—QMB-4868-4	48"	
1—Front	1—QM-3168-TS		291.00
1—Box	1—QM-3168-B		
Total Price			\$1210.80



MOTOR STARTER CENTERS

UNASSEMBLED TYPE

208 V. AC

240 V. AC

▲480 V. AC

TYPE
QMB

▲APPLICATION: For use on Three Phase AC systems, 208, 240 or 480 Volts.

MAINS: Main Lugs: Main Switch: 100 or 200 A.
200, 400 or 600 A. Main Breaker: 100 or 225 A.
(Refer to Page 78 for listing.)

FUSIBLE SWITCH DISCONNECTS:

Type QMB — Quick-Make, Quick-Break HP rated Plug-On Switch Units.
(Refer to Page 78 for listing.)

CIRCUIT BREAKER DISCONNECTS:

FA, 100 A. frame, and KA, 225 A. frame, 3 Pole, HP rated Plug-On Breaker Units rated 240 V., 480 V. and 600 V., AC

STARTERS:

Line Voltage Type:
Non-Reversing — Twin Units:
Sizes 0, 1 and 2 — Class 8536 Types SB, SC and SD
Sizes 3 and 4 — Class 8536 Types E and F
Reversing — Single Units:
Sizes 0 through 4 — Class 8736 Types B, C, D, E and F

CABINETS:

Front — Without door, finished gray baked enamel.
Boxes — Without knockouts, finished gray baked enamel.
(Complete box and guller dimension data on Page 78).

CIRCUIT BREAKER DISCONNECTS▲

TWIN MOUNTED FA — PRICE PER TWIN UNIT

Breaker Disconnect Ampere Rating		Height (Inches)	Price	
Left Unit	Right Unit		3 Pole Disconnect	
			240 Volt 100 A. Frame	480 Volt 100 A. Frame
15-60 A.	Blank	6	\$100.	\$130.
15-60 A.	15-60 A.	6	149.	209.
70-100 A.	Blank	6	123.	145.
70-100 A.	15-60 A.	6	172.	224.
70-100 A.	70-100 A.	6	195.	239.

SINGLE MOUNTED KA — PRICE EACH

Breaker Disconnect Ampere Rating	Height (Inches)	Price	
		3 Pole Disconnect	
		240 Volt 225 A. Frame	480 Volt 225 A. Frame
125	6	\$309.	\$309.
150	6	309.	309.
175	6	309.	309.
200	6	309.	309.
225	6	309.	309.

†STARTERS

NEMA Size	Maximum Rating		Class 8536 — Types SB, SC and SD Type S — Non-Reversing			Class 8536 — Types E and F Non-Reversing			Class 8736 — Types B, C, D, E and F Reversing		
			Unit Height (Inches)	Twin-Start Unit (Two Non-Reversing Starters)		Unit Height (Inches)	Twin-Start Unit (Two Non-Reversing Starters)		Unit Height (Inches)	Single Starter Unit (One Reversing Starter)	
	Volts	HP (3Φ)		Catalog Number	Price*		Catalog Number	Price*		Catalog Number	Price*
0	240	3	9	QMB S 8536-1-00-220	\$ 186.				9	QMB 8736-1-0-220	\$ 244.
0	480	5	9	QMB S 8536-1-00-480	186.				9	QMB 8736-1-0-440	244.
1	240	7½	9	QMB S 8536-1-11-220	213.				9	QMB 8736-1-1-220	271.
1	480	10	9	QMB S 8536-1-11-480	213.				9	QMB 8736-1-1-440	271.
2	240	15	10½	QMB S 8536-2-22-220	311.				12	QMB 8736-2-2-220	386.
2	480	25	10½	QMB S 8536-2-22-480	311.				12	QMB 8736-2-2-440	386.
3	240	30				18	QMB 8536-3-33-220	\$ 556.	18	QMB 8736-3-3-220	587.
3	480	50				18	QMB 8536-3-33-440	556.	18	QMB 8736-3-3-440	587.
4	240	50				21	QMB 8536-4-44-220	1095.	21	QMB 8736-4-4-220	1169.
4	480	100				21	QMB 8536-4-44-440	1095.	21	QMB 8736-4-4-440	1169.

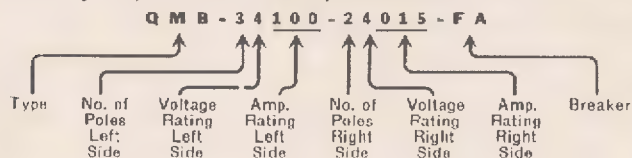
*Prices include overload relay thermal units but starters will be shipped less thermal units and \$5.00 deducted for each pair of units. Select thermal units from Table on Page 218 and obtain from distributor stock.

†Space and drilling provided for field addition of control voltage transformer and fuse base — Type S units only.

◆220 and 240 volt applications use same starter, for 208 volt applications specify on order. 440 and 480 volt applications use same starter

CATALOG NUMBERS — CIRCUIT BREAKER UNITS

Catalog numbering system illustrated below has been adopted to simplify ordering of any combination of 2 or 3 pole breakers:



SELECTION OF COMPONENTS

- List required motor starter units (reversing or non-reversing) and circuit breaker disconnects from tables above. Specify HP, voltage, phase, frequency and full load current rating of motor.
▲Consult local Field Office for price of 2-pole and 600 V. 100 A. Frame QMB Circuit Breaker units.
For motor starter voltages other than merchandised standard voltages of 208, 240 and 480 volts, use factory assembled panelboards listed on Page 81 or distributor modified motor starters.
- List required fusible switches and branch circuits from Page 78.
- Select interior, box and front catalog numbers and blanks (if required) as outlined on Page 78.

STARTER DATA

- Line voltage coils are furnished as standard on all starters.
- Twistouts are provided in starter covers for Start-Stop push buttons, selector switches and pilot lights.
- Starter door interlocks furnished with motor starter enclosures.

ACCESSORIES

Description	Page No.
Push Button "Start-Stop" Class 9999	216
Push Button "Forward-Reverse-Stop" Class 9001 Type TR	177
Selector Switch "Hand-Off-Auto" Class 9999	216
Pilot Light Class 9001 Type TP	169
Electrical Interlocks Class 9999	215
Control Voltage Transformer Class 9070	204

Accessories listed above are available for field installation on all units, including Type S. Consult page numbers shown for prices.

ADAPTOR PANS permit replacing a larger size Class 8536 motor starter with a smaller size starter (Not required for Type S).

Description	Cat. No.	Price
Mounts Size 0 or 1 starter in 12" space.	QMB-1AP	\$5.90
Mounts Size 0 or 1 starter in 18" space.	QMB-2AP	9.90
Mounts Size 2 starter in 18" space.	QMB-3AP	9.90
Mounts Size 2 or 3 starter in 21" space.	QMB-4AP	9.90

†Starter size, HP and fuse rating selection tables are listed on Page 81.
Applicable circuit breaker ratings are listed on Page 82.



FUSIBLE DISTRIBUTION PANELBOARDS

TYPE
QMB

250 V. AC or DC
600 V. AC

•FACTORY ASSEMBLED TYPE

APPLICATION: For use on AC or DC systems. Meets Federal Specification W-P-115a, Type II, Class 1. Listed by Underwriters' Laboratories.
Service Entrance approved with six circuits or less or with Main Switch.

SERVICE: 1 ϕ 2 W., 1 ϕ 3 W., 3 ϕ 3 W., 3 ϕ 4 W.
600 V. Max. AC
250 V. Max. DC

MAINS: Main Lugs:
200 A. — 1-300 MCM Al or Cu wire
400 A. — 2-600 MCM Al or Cu wire
600 A. — 2-600 MCM Al or Cu wire
800 A. — 3-600 MCM Al or Cu wire
1200 A. — 4-600 MCM Al or Cu wire

Main Switch:
100 A. — 1-300 MCM Al or Cu wire
200 A. — 1-300 MCM Al or Cu wire
400 A. — 2-600 MCM Al or Cu wire
600 A. — 2-600 MCM Al or Cu wire

BRANCHES: Type QMB Quick-Make, Quick-Break, HP rated Plug-On Switch Units.
30 A. — #8 Cu wire
60 A. — #4 Cu wire
100 A. — #0 Al or Cu wire

200 A. — 300 MCM Al or Cu wire
400 A. — 2-600 MCM Al or Cu wire
600 A. — 2-600 MCM Al or Cu wire

CABINETS: Fronts — Without door, gray baked enamel finish. ▲
Boxes — Without knockouts, gray baked enamel finish.
(Complete box dimension data on Page 83).

Panelboard ordering information on Page 86.



PRICING

BASE PRICE — MAIN SWITCH

No. of Poles	MAIN SWITCH RATING							
	100 A.	H	200 A.	H	400 A.	H	600 A.	H
250 V. AC or DC								
2	\$243.	29	\$243.	29	\$474.	32	\$726.	35
3	298.	29	298.	29	608.	32	872.	35

600 V. AC or 250 V. DC

2	\$291.	29	\$291.	29	\$583.	32	\$791.	35
3	353.	29	353.	29	729.	32	931.	35

BASE PRICE—LUGS ONLY (2 or 3 Pole)

Max. Branch Switch	MAIN RATING							
	200 A.	H†	400 A.	H†	600 A.	H†	800 A.	H†
200	\$112.	20	\$135.	20	\$172.	20	\$209.	32
600	159.	20	159.	20	209.	20	258.	32

SOLID NEUTRAL — PRICE

200 A.	H	400 A.	H	600 A.	H	800 A.	H	1200 A.	H
\$31.	*	\$40.	*	\$57.	*	\$81.	*	\$95.	*

†H dimension includes main lug and solid neutral compartment, top and bottom gutters.

*No additional space required. Mounted in main lug compartment.

BRANCH SWITCHES

Ampere Rating Branch Switches	Type Unit	250 V. AC or DC				★600 V. AC or 250 V. DC			
		2 POLE	3 POLE	Space Only	H	2 POLE	3 POLE	Space Only	H

Twin Mounted Branch Switches — Price Per Twin Unit

30A.-30A.	Twin	\$ 62.	\$ 81.	\$ 20.	3	\$111.	\$132.	\$ 39.	6
60A.-60A.	Twin	74.	100.	30.	4½	111.	132.	39.	6
100A.-100A.	Twin	113.	140.	39.	6	166.	211.	46.	7½

Single Mounted Branch Switches — Price Each

100A.	Single					\$ 83.	\$106.	\$ 46.	7½
200A.	Single	\$138.	\$192.	\$ 57.	9	186.	246.	57.	9
400A.	Single	302.	438.	86.	12	412.	558.	86.	12
600A.	Single	470.	617.	86.	15	536.	677.	86.	15

METHOD OF PRICING

1. Make a sketch with main lugs or main switch at top or bottom.
2. List required branch circuits including ampere capacity and number of poles. Include any spaces for future circuits.
30-60 twin units are available at same price as 60-60 twin.
30-100 or 60-100 twin units are available at same price as 100-100 twin unit.
30 and 60 ampere 600 volts single units also available. Consult Field Office.
30, 60 and 100 ampere 250 volt single units are not available. Should one unit be required, price as twin.
3. List neutral if required. No additional space required.
4. Insert mains capacity, voltage and type of distribution system.
• Price additional features from Pages 84 and 85.
5. Insert height in inches opposite all items.
6. If total height exceeds 92 inches, estimate as two or more single panelboards (separate base for each), adding sub-feed lugs as required so that contractor can cable panelboards together. If total height is less than 44 inches enough "SPACE ONLY" SECTIONS at full price must be added to equal 44 inches.
7. Insert at the right of each item the prices taken from tables above and the sum will be the price of complete panelboard including the cabinet.
▲ If door in cabinet front is required, add \$86. for 31" wide box or \$98. for 38" wide box.
★ 600 volt units may be modified to accept Class J fuses. Refer to Page 83 for pricing.



MOTOR STARTER CENTERS

FACTORY ASSEMBLED TYPE

208 V. AC
240 V. AC
480 V. AC
600 V. AC

TYPE
QMB



APPLICATION: For use on Three Phase AC systems, 208, 240, 480 or 600 volts.

MAINS: Main Lugs: 200 A. thru 1200 A. (Refer to Page 80 for Listing).
Main Switch: 100 A thru 600 A.
Main Breaker: 100 A. thru 225 A.

FUSIBLE SWITCH DISCONNECTS: Type QMB — Quick-Make, Quick-Break, HP rated Plug-On Switch Units. (Refer to Page 80 for Listing).

CIRCUIT BREAKER DISCONNECTS: Type QMB-FA and QMB-KA, HP rated Plug-On Circuit Breaker Units. (Refer to Page 82 for Listing).

STARTERS: Line Voltage Type:
Non-Reversing — Twin Units.
Sizes 0, 1 and 2 — Class 8536 Types SB, SC and SD
Sizes 3 and 4 — Class 8536 Types E and F
Reversing — Single Units:
Sizes 0 through 4 — Class 8736 Types B, C, D, E and F

CABINETS: Fronts — Without door, finished gray baked enamel.
Boxes — Without knockouts, finished gray baked enamel.
(Complete box and gullot dimension data on Page 83).

STARTERS — CLASS 8536, 3P., NON-REVERSING — TWIN UNITS

208 V. AC or 240 V. AC								480 V. AC or 600 V. AC							
NEMA STARTER SIZE		Maximum Rating — 3 ϕ (Based on Dual Element Fuses)				Price (Starter Only Does Not Include Disconnect)	Unit Height (Inches)	NEMA STARTER SIZE		Maximum Rating — 3 ϕ (Based on Dual Element Fuses)				Price (Starter Only Does Not Include Disconnect)	Unit Height (Inches)
		Starter HP		Fuse Size—Amp.						Starter HP		Fuse Size—Amp.			
Left Unit	Right Unit	Left Unit	Right Unit	Left Unit	Right Unit		Starter Unit Only	Left Unit	Right Unit	Left Unit	Right Unit	Left Unit	Right Unit		Starter Unit Only
0	0	3	3	30	30	\$ 231.	9 *†	0	0	5	5	30	30	\$231.	9 *†
	Blank			30		149.	9 *†		Blank	5		30		149.	9 *†
1	1	7½	7½	30	30	258.	9 *†	1	1	10	10	30	30	258.	9 *†
1	0	7½	3	30	30	250.	9 *†	1	0	10	5	30	30	250.	9 *†
1	Blank	7½	7½	30		169.	9 *†	1	Blank	10		30		169.	9 *†
2	2	15	15	60	60	371.	10½ *	2	2	25	25	60	60	371.	10½ *
2	1	15	7½	60	30	327.	10½ *	2	1	25	10	60	30	327.	10½ *
2	0	15	3	60	30	319.	10½ *	2	0	25	5	60	30	319.	10½ *
2	Blank	15		60		238.	10½ *	2	Blank	25		60		238.	10½ *
3	3	30	30	100	100	645.	18 ††	3	3	50	50	100	100	645.	18 ††
3	2	30	15	100	60	570.	18 ††	3	2	50	25	100	60	570.	18 ††
3	1	30	7½	100	30	525.	18 ††	3	1	50	10	100	30	525.	18 ††
3	0	30	3	100	30	518.	18 ††	3	0	50	5	100	30	518.	18 ††
3	Blank	30		100		437.	18 ††	3	Blank	50		100		437.	18 ††
4	4	50	50	200	200	1199.	21 ††	4	4	100	100	200	200	1199.	21 ††
4	3	50	30	200	100	979.	21 ††	4	3	100	50	200	100	979.	21 ††
4	2	50	15	200	60	903.	21 ††	4	2	100	25	200	60	903.	21 ††
4	1	50	7½	200	30	859.	21 ††	4	1	100	10	200	30	859.	21 ††
4	0	50	3	200	30	852.	21 ††	4	0	100	5	200	30	852.	21 ††
4	Blank	50		200		770.	21 ††	4	Blank	100		200		770.	21 ††

STARTERS — CLASS 8736, 3P., REVERSING — SINGLE UNITS

0	3	30	\$286.	9	0	5	30	\$286.	9
1	7½	30	315.	9	1	10	30	315.	9
2	15	60	446.	12	2	25	60	446.	12
3	30	100	676.	18	3	50	100	676.	18
4	50	200	1273.	21	4	100	200	1273.	21

*Type S, Class 8536, Types SB, SC and SD starters. Unit includes space for addition of control voltage transformer and fuse block (Form FT).

†Class 8536, Types E and F. If Form FT modification is required, add 3" to unit height.

‡For 220 volt application use 240 volt starter.

*6" high enclosure with Type S starters available. Consult local Field Office.

†Prices include overload relay thermal units. Select from Table on Page 218.

‡Deduct \$5.00 for each pair of thermal units omitted.

‡For 440 volt application use 480 volt starter. For 550 volt application use 600 volt starter.

STARTER DATA

Melting alloy type overload relays furnished as standard. When specified, bi-metal overload relays will be supplied at no extra charge. When required on Type S starters contact local Field Office. Line voltage coils will be furnished as standard. Starter will be supplied for separate control (specify voltage and frequency)—Form S at no extra charge.

Line side of the motor starter is wired from the QMB disconnect switch or circuit breaker mounted directly above the starter. Disconnect switch or circuit breaker disconnect and starter doors are mechanically interlocked.

PRICING PROCEDURE

1. Obtain QMB base price from Page 80.
2. Price QMB switches from Page 80 or QMB circuit breakers from Page 82.
3. Price starters from table above.
4. Add separately for optional features on starter units from table at right.
5. To obtain height of motor starter center, use standard dimensions of main lugs or main switch, required QMB units and solid neutral, if required, from Page 80. Add height of starters as shown above. Box height is not to exceed 92 inches.

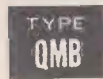
OPTIONAL FEATURES

Feature	Price
Push Button: "Start-Stop", Class 9999 (wired).....	\$11.30
"Forward-Reverso-Stop", Class 9001 Type TR (wired).....	56.00
Selector Switch: "Hand-Off-Auto", Class 9999 (wired).....	11.30
Pilot Light: Red or Green, Class 9001 Type TP (wired).....	37.00
(Includes electric interlock when required)	
Electrical Interlocks, additional (unwired).....	15.50
Starters: Part-winding, Class 8640.....	
Two-speed, Class 8810.....	
Contactors: AC Magnetic, Class 8502.....	
AC Mechanically Held, Class 8508.....	
AC Lighting, Class 8903.....	
AC Reversing, Class 8702.....	
Control Transformers, Class 9070.....	
Lighting Circuit Section (20 Circ. Max.), Type NQO.....	
	Consult your local Square D Field Office for Price and Dimensions



MOTOR STARTER CENTERS

CIRCUIT BREAKER DISCONNECTS



208-220 V. AC
440-550 V. AC

FACTORY ASSEMBLED TYPE

APPLICATION: For use on Three Phase AC systems, 208, 220, 440 or 550 volts.

MAINS: Main Lugs
200 A. thru 1200 A.
(Refer to Page 80 for Listing).

Main Switch:
100 A. thru 600 A.
(Refer to Page 80 for Listing).

CIRCUIT BREAKER DISCONNECTS: Type QMB-FA, 100 A. frame, and Type QMB-KA, 225 A. frame, 3 Pole, HP rated. Plug-On Breaker Units rated 240 V., 480 V. and 600 V. AC.

STARTERS: Line Voltage Type:
Non-Reversing — Twin Units:
Sizes 0, 1 and 2 — Class 8536 Types SB, SC and SD
Sizes 3 and 4 — Class 8536 Types E and F
Reversing — Single Units:
Sizes 0 through 4 — Class 8736 Types B, C, D, E and F
(Refer to Page 81 for Listing).

CABINETS: Front — Without door, finished gray baked enamel.
Boxes — Without knockouts, finished gray baked enamel.
(Complete box and gutter dimension data on Page 83).



CIRCUIT BREAKER DISCONNECTS

Breaker Disconnect Ampere Rating		Type Unit	240 Volt			480 Volt		
Left Unit	Right Unit		3 Pole	Space Only	Height (Inches)	3 Pole	Space Only	Height (Inches)

TWIN MOUNTED TYPE QMB-FA — PRICE PER TWIN UNIT

15-60 A.	Blank	Twin	\$107.	\$21.	6	\$137.	\$21.	6
15-60 A.	15-60 A.	Twin	156.	21.	6	216.	21.	6
70-100 A.	Blank	Twin	130.	21.	6	152.	21.	6
70-100 A.	15-60 A.	Twin	179.	21.	6	231.	21.	6
70-100 A.	70-100 A.	Twin	202.	21.	6	246.	21.	6

SINGLE MOUNTED TYPE QMB-KA — PRICE EACH

125 A.	Single	\$313.	\$21.	6	\$313.	\$21.	6
150 A.	Single	313.	21.	6	313.	21.	6
175 A.	Single	313.	21.	6	313.	21.	6
200 A.	Single	313.	21.	6	313.	21.	6
225 A.	Single	313.	21.	6	313.	21.	6

SELECTION TABLE

Starter HP	Volts (60 Hertz)	Breaker Rating	NEMA Starter Size
3	208-220	20 A.	0
	440-550	15 A.	0
5	208-220	30 A.	1
	440-550	15 A.	0
7½	208-220	50 A.	1
	440-550	20 A.	1
10	208-220	60 A.	2
	440-550	30 A.	1
15	208-220	90 A.	2
	440-550	40 A.	2
20	208-220	100 A.	3
	440-550	50 A.	2
25	208-220	100 A.	3
	440-550	60 A.	2
30	208-220	125 A.	3
	440-550	70 A.	3
40	208-220	150 A.	4
	440-550	90 A.	3
50	208-220	200 A.	4
	440-550	100 A.	3
60	440-550	125 A.	4
75	440-550	125 A.	4
100	440-550	175 A.	4
	550	175 A.	4

DISCONNECT DATA

FA — 100 A. frame breakers, 15 thru 100 amperes, are available in QMB-FA disconnects. Breakers are twin mounted in any ampere rating combination. Also available with a breaker on one side and space, with connectors, for a future breaker on the other side of a twin enclosure.

For prices of 600 volt, 100 A. frame breaker disconnects, consult your Square D Field Office.

KA — 225 A. frame breakers, 125 thru 225 amperes, are available in QMB-KA disconnects. Breakers are single mounted only.

Circuit breaker disconnect and starter doors are mechanically interlocked.

Complete QMB circuit breaker disconnects are available from stock. See Page 79.

PRICING PROCEDURE

1. Obtain QMB base price from Page 80.
2. Price Starters from Page 81.
3. Add separately for optional features on starter units. Obtain prices from Page 81.
4. Price Circuit Breaker Disconnects from table above.
5. To obtain height of motor starter center, use standard dimensions of QMB main lugs or main switch and solid neutral, if required. Add height of starters from Page 81. Add height of circuit breaker disconnects from table above. Box height is not to exceed 92 inches.



FUSIBLE DISTRIBUTION PANELBOARDS

QMB

STANDARD QMB PANELBOARD CABINETS

2 POLE BUS CONNECTIONS			Cabinet Data		Cabinet Type			
Phase Connection			Width		PPS-3100-B *(QM-3100-B)		PPM-3800-B	
AB			Depth		31		38	
CA			Side Gutters		10 1/2		14 1/2	
BC			End Gutter — Opposite Mains		6		9 1/2	
			Maximum QMB Branch unit.		5 1/2		5 1/2	
			Mains Rating — Al-Cu wire range per phase.		200 Amperes		600 Amperes	
			Min. Gutter		5		8	
			200 A. (1—#6-300 MCM).		8		10	
			400 A. (2—#4-600 MCM).		10		12	
			600 A. (2—#4-600 MCM).		12		14	
			800 A. (3—#4-600 MCM).		14			
			1200 A. (4—#4-600 MCM).					
Catalog Number			Std. Box Ht. in Inches		Unit Mtg. Space in Inches		Std. Box Ht. in Inches	
31" Box			38" Box		Trim▲		Unit Mtg. Space in Inches	
QM-3144-B	PPM-3844-B	XXXX-44-TS	44	24	44	24	44	24
QM-3156-B	PPM-3856-B	XXXX-56-TS	56	36	56	36	56	36
QM-3168-B	PPM-3868-B	XXXX-68-TS	68	48	68	48	68	48
QM-3180-B	PPM-3880-B	XXXX-80-TS	80	60	80	60	80	60
QM-3192-B	PPM-3892-B	XXXX-92-TS	92	72	92	72	92	72

▲ Replace XXXX with "QM31" for 31" boxes or "QW38" for 38" boxes.

Ⓢ When panelboards have 800 A. or 1200 A. mains, unit mounting space is reduced by 12"

* PPS-3100-B and QM-3100-B type boxes are interchangeable.

REPLACEMENT QMB BRANCH AND MAIN SWITCH UNITS AND EXTENSION ASSEMBLIES

WHEN ORDERING SPECIFY:

Catalog Number

Ampere Capacity and Voltage

Number of Poles

Panelboard Catalog Number (From Panelboard Nameplate)

† All mounting hardware except extension assemblies is included with units.

Order blanks from Page 78, if required to fill out unit space

± BRANCH UNITS

30-200 Ampere Units are Plug-on Connection. 400 and 600 Ampere Units are Bolted Connection.

Unit Ampere Rating	250 VOLTS AC						★600 VOLTS AC or 250 VOLTS DC					
	Unit Height (Inches)	Two Pole			Three Pole		Unit Height (Inches)	Two Pole			Three Pole	
		Phase Conn.	Catalog Number	Price	Catalog Number	Price		Phase Conn.	Catalog Number	Price	Catalog Number	Price
30-30 †	3	*	QMB-203-T	\$43.	QMB-303-T	\$57.	6	*	QMB-2603-T	\$92.	QMB-3603-T	\$111.
60-60 †	4½	*	QMB-206-T	53.	QMB-306-T	73.	6	*	QMB-2606-T	92.	QMB-3606-T	111.
100-100 †	6	*	QMB-210-T	88.	QMB-310-T	112.	7½	*	QMB-2610-T	137.	QMB-3610-T	174.
200 †	9	*	QMB-2220	106.	QMB-3220	150.	9	*	QMB-2620	159.	QMB-3620	205.
400 ‡	12	CA	QMB-2240	273.	QMB-3240	382.	12	CA	QMB-2640	353.	QMB-3640	485.
400 ‡		AB	QMB-2240-L	273.				AB	QMB-2640-L	353.		
400 ‡		BC	QMB-2240-R	273.				BC	QMB-2640-R	353.		
600 ‡	15	CA	QMB-2260	426.	QMB-3260	558.	15	CA	QMB-2660	461.	QMB-3660	600.
600 ‡		AB	QMB-2260-L	426.				AB	QMB-2660-L	461.		
600 ‡		BC	QMB-2260-R	426.				BC	QMB-2660-R	461.		

* Two pole branch units are shipped with "CA" phase connection. "B" phase connector furnished with unit for easy field conversion.

‡ 30-60, 30-100 and 60-100, 2 and 3 pole 600 volt twin units are available from Factory Stock. For 250 volt unit adaptor kits, refer to Page 78.

† 30-200 ampere units when used in 38" wide boxes require extension assemblies as listed below.

★ For Class J Fuse Provisions — Applicable only to 600 Volt units. Add suffix J to catalog number. For 2 or 3 pole units, 30 thru 400 A., add \$5.80 per unit. For 2 pole, 600 A. unit, add \$34. for 3 pole, 600 A. unit, add \$51.

‡ For use in 38" wide, 14 1/2" deep box only.

MAIN SWITCH UNITS

100	9"	CA	QMB-2210-M	\$133.	QMB-3210-M	\$178.	9"	CA	QMB-2610-M	\$179.	QMB-3610-M	\$233.
200	9"	CA	QMB-2220-M	\$133.	QMB-3220-M	\$178.	9"	CA	QMB-2620-M	\$179.	QMB-3620-M	\$233.
400	12"	CA	QMB-2240-M	\$405.	QMB-3240-M	\$558.	12"	CA	QMB-2640-M	\$405.	QMB-3640-M	\$558.
600	15"	CA	QMB-2260-M	\$515.	QMB-3260-M	\$689.	15"	CA	QMB-2660-M	\$515.	QMB-3660-M	\$689.

EXTENSION ASSEMBLIES

(Required on All 30-200 Ampere Units when used in QW Type Panelboards — 38" Wide Box).

Ampere Capacity	250 VOLTS			600 VOLTS				
	Unit Height (Inches)	2 or 3 Pole		Unit Height (Inches)	Two Pole		Three Pole	
		Catalog Number	Price		Catalog Number	Price	Catalog Number	Price
30-30	3	QMB-303-LEX	\$ 8.10	6	QMB-206-EX	\$ 8.10	QMB-306-EX	\$10.50
60-60	4½	QMB-306-LEX	9.10	6	QMB-206-EX	8.10	QMB-306-EX	10.50
100-100	6	QMB-310-LEX	10.50	7½	QMB-210-EX	17.70	QMB-310-EX	26.00
200	9	QMB-320-EX	26.00	9	QMB-220-EX	17.80	QMB-320-EX	26.00



SCHEDULE G1 DISCOUNT

ADDITIONAL PANELBOARD FEATURES

FACTORY ASSEMBLED TYPE

APPLICATION: Following additional features are applicable to all factory assembled panelboards. **Following features cannot be furnished on unassembled I-LINE®, NQO, NQOB and QMB panelboards.** Consult Field Office for box sizes when additional features are incorporated in panelboards.

Panelboard Interiors

1. Increased Mains — Circuit Breaker Lighting Panelboards △

From	To	Main Lugs Onl	MAIN CIRCUIT BREAKER			
			2 Pole	3 Pole		
				NQO NQOB NA1B	NH1B	
50 A.	100 A.	\$13.10	\$38.00	\$55.00	\$30.00	
50 A.	200 or 225 A.	16.60	225.00	276.00	246.00	
100 A.	200 or 225 A.	16.60	203.00	232.00	207.00	

2. Sub-Feed Lugs 100 A. or 225 A. \$13.30 (For types NQO, NQOB, NA1B and NH1B.)

3. Sub-Feed Lugs (I-LINE or QMB Panelboards)

No. Poles	AMPERE RATING				
	225 A.	400 A.	600 A.	800 A.	1200 A.
2	\$ 21.20	\$ 40.00	\$ 81.00	\$114.00	\$135.00
3	30.00	49.00	88.00	126.00	148.00

4. For Lighting Panelboards for Use on 2 Phase, 5 Wire 125/250 V. solid neutral service with 125 V. single pole branches, use price of panelboard with single phase, 3 wire, solid neutral mains, having equivalent number of branches and add. \$32.00 △

5. 800 Ampere Bus Density 20" wide maximum cabinet width.... \$20.70 46" wide maximum cabinet width.... 55.00

6. Omitting Neutral Bar — deduct. \$14.00 △

7. Non-fusible Main Switch or sub-feed switches — price as fusible switch. Type QMB panelboards only

8. Non-Automatic Breakers — Consult Field Engineer for price deductions.

9. Split-Bus or Meter Loop △

●Maximum 20" Wide Cabinets

No. Poles	MAINS AMPERE RATING		
	100 A.-225 A.	400 A.	600 A.
2	\$32.46.	\$68.81.	\$81.88.
3			

9. (continued)

●Maximum 46" Wide Cabinets

No. Poles	MAINS AMPERE RATING				
	225 A.	400 A.	600 A.	800 A.	1200 A.
2	\$ 57.68.	\$ 68.81.	\$ 81.88.	\$114.126.	\$135.147.
3					

●Consult Field Office for additional height required.

10. Remote Control Switches (Contactors) for non-inductive loads (Push button control switches not included)

250 V. AC Tungsten Rating	Electrically Held Class 8903	Mechanically Held Class 8903 or ASCO Bul. 920

2 POLE

30 Amp.	\$234.	\$328.
60 Amp.	292.	417.
75 Amp.		417.
100 Amp.	377.	492.
150 Amp.		648.
200 Amp.	619.	761.
300 Amp.	671.	

3 POLE

30 Amp.	\$271.	\$366.
60 Amp.	352.	462.
75 Amp.		462.
100 Amp.	444.	555.
150 Amp.		786.
200 Amp.	741.	874.
300 Amp.	828.	

30 ampere light duty mechanically held contactors are also available:

2 Pole	\$166.
3 Pole	200.

11. Panelboard interiors and trims to fit existing boxes:

No deduction from the price of the complete panelboard for omitting the box. The price of the panelboard interior and special trim will be the price of the complete standard panelboard having the desired interior, providing the existing box is the same depth or deeper than the standard for the panelboard being ordered and mounting brackets are not required.

Deeper box than our standard and mounting brackets are required; add to price of complete standard panelboard. \$28. △

Shallower box than our standard; add to price of complete standard panelboard. \$57. △

Special trim only to fit existing box and interior; add to price of standard trim. \$57. △

12. Duct Connection — For price addition of I-Line or QMB panelboards mounted on feeder duct, refer to Page 103.



ADDITIONAL PANELBOARD FEATURES

Factory Assembled Panelboards

APPLICATION: Following additional features are applicable to all factory assembled panelboards. **Following features cannot be furnished on unassembled I-LINE®, NQO, NQOB and QMB panelboards.** Consult Field Office for box sizes when additional features are incorporated in panelboards.

Cabinets

Fronts

13. Spring Hinges (Bommer, plain, brass or iron)—per door \$ 9.50 △

14. Concealed Hinges — per door, where not standard 9.50

15. Locks:
 Corbin 2510, 2520 31.00
 Yale 511, 511S 31.00
 Corbin 2720 14.70
 Master Keying — per lock 2.40

16. Front Punched for tumbler switches—(Switches not included).
 First front with one switch space 20.60 △ *
 Each additional switch space in either first or additional fronts 10.00 △ *

17. Directory frame with glass (other than manufacturer's standard) 6.60

18. No. 10 gauge fronts—(heavier than Code gauge) 33.00 △ *
 Box and front 46.00 △ *

19. Dust resisting fronts only:
 Maximum 20" wide cabinet 67.00 △ *
 Maximum 46" wide cabinet 88.00 △ *

20. Vault handle locks (when not furnished as standard) 32.00

21. Special front or door arrangements including
 (a) Door-in-door with one door over interior and additional door which exposes wiring gutter
 (b) Double or split door, one above the other
 (c) One front with two doors in place of two individual fronts (to cover two separate boxes mounted side by side) 67.00 *

22. Galvanized sheet steel fronts instead of furniture steel 43.00 *

23. Glass panel in door 58.00 *

24. Watt-hour meter window or cutout in trim 46.00 *
 (Extra space may be required — consult factory)

25. Fronts hinged to the box 30.00 *

Boxes

26. Cadmium plated:
 Maximum 20" wide cabinet
 Box or front only \$ 46.00 △
 Box and front 80.00 △
 Maximum 46" wide cabinet
 Box or front only 96.00 △
 Box and front 156.00 △

27. Standard commercially available colors:
 Black, green, brown, gray, crystalline or prime coat only 67.00 *
 For other colors

28. No. 10 gauge boxes (heavier than Code gauge) 33.00 *
 Box and trim 46.00 *

29. Increasing maximum 20" wide panelboard box to 8" maximum depth or 46" wide panelboard box to 18" maximum depth 46.00 *

30. Increased side gutters — For each 7" or fraction thereof increase in width 46.00 *

31. Increased end gutters — For each 12" or fraction thereof increase in length 46.00 △ *

32. Weather-proof or dust-resisting panelboard cabinets, (NEMA 3R or 12).
 Maximum 20" wide cabinet
 Single door type 126.00 *
 Maximum 46" wide cabinet
 Single door type 168.00 *

Note: For type QMB panelboards a front-with-door charge must also be included. Refer to Page 80.

33. Special drillings or knockouts in endwalls when template accompanies order 13.50

34. Steel Cable-Duct (trough) for column width (8 5/8" and 6 7/8" wide) panelboards.

Additional Lengths (Order by Catalog Number)

Duct Length	Catalog Number		Price
	8 5/8" W x 5" D	6 7/8" W x 5" D	
84"	MTX-884	MTX-684	\$59.00 △
96"	MTX-896	MTX-696	64.00 △
104"	MTX-8104	MTX-6104	69.00 △
112"	MTX-8112	MTX-6112	74.00 △

*If individual order calls for duplicate devices with the same special feature or if a quantity of 10 or more assorted panelboards is involved, deduct 25% of the price shown for the special feature.
△Applicable to column width (LX) panelboards.

SCHEDULE G2 DISCOUNT

Accessories

Description	Cat. No.	Each	Description	Cat. No.	Each
Handle Tie (QO or QOB) △	QO-1HT	\$0.20	Equipment Ground Bar Kits		
Handle Lockoff			NQO, NQOB, NA1B, NH1B, NTFB and NTHB		
QO, Q1, A1 and Y1B	HLO-1	0.90	1 thru 12 circuits, 225 A. Max. Mains	PK-9GTA	\$1.30
Handle Padlock Attachment			13 thru 20 circuits, 225 A. Max. Mains	PK-12GTA	1.50
QO, QOB, Q1, Q1B, QFSB and HFSB (1 Pole)	QO-1PA	1.00	21 thru 30 circuits, 225 A. Max. Mains	PK-18GTA	1.80
QO, QOB, Q1 and Q1B (2 or 3 Pole)	QO-1PL	1.00	31 thru 54 circuits, 225 A. Max. Mains	PK-23GTA	2.00
QFSB (2 or 3 Pole)	HPA-2QFS	1.00	1 thru 54 circuits, 600 A. Max. Mains	PK-27GTA	2.10
FA and KA	HPA-FK	2.30	I-Line and QMB Distribution Panelboards		
Q2 and FY	HPA-FYQ	2.00	1 thru 45 circuits, 1200 A. Max. Mains	PK-32DQTA	10.60
LA and MA (Permanent trip type)	HPA-LM	2.70	100 A. sub-feed lug kit	QO-100ASF	25.00
Closure Plate for Twistout in			225 A. sub-feed lug kit	QO-225ASF	30.00
NQO, NQOB and NA1B Interior Trims	QO-1CP	0.50	I-Line Panelboard Box Extension Kits		
Touch-up Paint, Blue-Gray (Aerosol Can)	PK-3SP	3.80	HCM or NH1B 9" High Extension	HC-2609-EXF or S	51.00
Touch-up Paint USAS, #49 Gray (Aerosol Can)	PK-49SP	3.80	HCM 9" High Extension	HC-3209-EXF or S	51.00
Adaptor Kit for Fusible Switches	See Page 78		HCW 12" High Extension	HC-4112-EXF or S	51.00
Accessories for QMB Motor Starters	See Page 79		HCWM 12" High Extension	HC-4112-DEXF or S	51.00
			Flush Lock for Mono-Flat Trims	PK-4FL	7.50

△Handle ties permit conversion of two single pole breakers to double pole, individual trip breakers
●For use with Main Lug NQO panelboards only. Sub-feed lugs MUST be same rating as panelboard



CIRCUIT BREAKER & FUSIBLE PANELBOARDS

PANELBOARD ORDERING INFORMATION

ORIGINAL INSTALLATIONS: To facilitate order processing, certain pertinent data is required. Such information should appear on the face of the order. Outlined below, for your guidance, is the data required to insure prompt and efficient handling of your order. Complete panelboard application data, showing services, mains ratings, box sizes and applicable circuit breaker or fusible branches, is listed on Page 56.

Volts: (Specify service; AC or DC).

Phase: (1, 2, or 3).

Wire: (2, 3, 4 or 5).

Hertz:

Mains: (Lugs, Circuit Breaker or Fusible Switch).

Panelboard Designation: (LP1, MDP, etc.).

Branches Required: (List quantity, amperage and number of Poles).

Feeders: (Specify Wire Size per ϕ).

Feeders Enter At: (Top or bottom)

Mounting: (Flush or Surface).

Knockouts: (None, standard or special).

(When special knockouts are required, template must accompany the order).

Ship Box Ahead:

Additional Features or Equipment: (Increased gutters, time clocks, etc.)

REPLACEMENT EQUIPMENT

General — When ordering replacement equipment, the panelboard catalog number, service and mains rating should be shown on the face of the order. Panelboard catalog numbers are prefixed by 2 or more letters. If such information is unavailable, the type of panelboard and approximate date of manufacture should be stated.

CIRCUIT BREAKERS

Replacements — Replacement circuit breakers are readily available from your local Square D Distributor. Furnish quantity required, ampere rating and number of poles. Catalog numbers of all breaker types and frame sizes are listed in Distribution Equipment Catalog, Section 600.

Existing Spaces — Circuit breakers for installation in spaces opposite an existing breaker of the same type or frame size, do not require additional mounting hardware and should be ordered as indicated under "Replacements" above. Example: 2 — A1B 350, 50 A., 3 P., circuit breaker for use in 120/208 V., 3 Ph., 4 W., panelboard catalog number NA1B-1234-5.

Spaces covering the full panelboard width may or may not require mounting assemblies. If examination of the panelboard shows that bus connectors and mounting hardware are required, specify on order "With Mounting Assembly". When 1 or 2 pole circuit breakers are ordered for use in 3 phase panelboards, specify phase connections required. Example: 1 — MAL26600, 600A., 2 P., circuit breaker for use in 600 V., 3 Ph., 3 W. panelboard catalog number MLW-5678-6 With mounting assembly for A-B phase connection.

FUSIBLE BRANCH CIRCUITS

QMB Fusible branch circuits are listed on Page 83. Mounting assemblies are not required for 31" wide Type QMB panelboards. "Extension Assemblies", as listed on Page 83, are required when mounting 30 A. thru 200 A. QMB Fusible units in 38" wide Type QMB panelboards. Example: 1 — QMB-3610-T, 100 A., 3 P., twin unit. 1 — QMB-310-EX Extension Assembly. For use in 38" wide, 600 V., 3 Ph., QMB panelboard catalog number QW-6789-7

REPAIR PARTS

Service Bulletins and individual Service Parts sheets are available for all catalog listed Square D panelboards. If replacement parts are required for panelboards not listed or shown in the Service Bulletin, contact your local Square D Field Office for availability of parts.

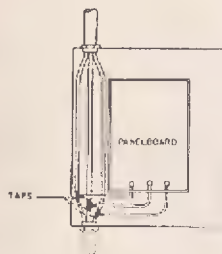
When ordering replacement parts, specify quantity, part number and description of part giving complete nameplate data of panelboard. Example: 4 — 739137 leveling nuts for use in 120/240 V., 1 Ph., 3 W., 225 A. main lug panelboard catalog number NQOB-3456-8.

PANELBOARD CODE REQUIREMENTS

— Panelboard Gutter Taps —

N.E.C. Paragraph 240-15 — states overcurrent devices shall be located at the point where the conductor to be protected receives its supply. Exception No. 5 to this paragraph permits omission of the main overcurrent device if, (1) the smaller conductors have a current-carrying capacity of not less than the sum of the allowable current-carrying capacities for conductors of the one or more circuits or loads supplied, (2) the tap is not over 10 feet long and does not extend beyond the switchboard, panelboard or control devices which it supplies.

Gutter taps as illustrated are permitted under this ruling.



— 42 Circuit Rule —

N.E.C. Paragraph 384-14 — states a lighting and appliance branch circuit panelboard is one having more than 10% of its overcurrent devices rated 30 amperes or less, for which neutral connections are provided.

N.E.C. Paragraph 384-15 — states not more than 42 overcurrent devices (other than those provided for in the mains) of a lighting and appliance branch circuit panelboard shall be installed in any one cabinet or cutout box.

The National Electrical Code states — a two-pole circuit breaker shall be considered two overcurrent devices; a three-pole breaker shall be considered three overcurrent devices. Therefore, panelboards having more than 42 poles and covered by the above rulings must be built as two panelboards.



LOW-VOLTAGE POWER CIRCUIT BREAKERS

INDIVIDUALLY ENCLOSED TYPE

GENERAL PURPOSE ENCLOSURE

600 Volt AC

K-225 PB-2000
K-600 K-3000
PB-1600 K-4000



PB-1600 Breaker
in General Purpose
Enclosure

K-225 & K-600: 20 ampere through 600 ampere power circuit breakers are supplied in wall mounted type enclosures and have stored energy (quick-make and quick-break) operating mechanisms. The breaker is of drawout construction having a position indicator for the positions of fully closed, test, and disconnect. In the disconnect position, the separable connectors are disconnected from the line and load contacts and the circuit breaker is entirely isolated.

PB-1600 & PB-2000: 500 ampere through 2000 ampere breakers are stationary mounted in a wall mounting type enclosure. Closure plates are screw removable for wiring and maintenance. The breakers have a stored energy (quick-make and quick-break) operating mechanism.

K-3000 & K-4000: 2000 ampere through 4000 ampere breakers are stationary mounted in a free standing structure with removable side and rear plates for wiring. The increased weight of larger frame circuit breakers makes floor mounting free standing constructions more practical.

When Ordering, Specify:

1. Catalog number of breaker and accessory form letters.
2. Number of poles.
3. Trip coil rating (amperes) and trip setting.
4. Manual or electrical operation. [specify control voltage for E. O. Breakers].
5. Frequency.
6. Accessories.
7. Any special conditions or requirements.

For large motors, give complete characteristics including full load current, locked rotor current, HP, RPM, operating voltage, and type of motor. For resistance welding circuits, give weld current and duty cycle. For E. O. Breakers, shunt trip, under-voltage trip, or indicating lights give control voltage.

Breaker Type	Range of Pick-up Settings Amperes	Catalog Numbers 3 Pole Only*	
		Manual Operation	Electrical Operation
K-225	12-25	K-225 -3MG20	K-225 -3EG20
	20-50	K-225 -3MG40	K-225 -3EG40
	40-90	K-225 -3MG70	K-225 -3EG70
	70-160	K-225 -3MG125	K-225 -3EG125
	120-285	K-225 -3MG225	K-225 -3EG225
K-600	20-50	K-600 -3MG40	K-600 -3EG40
	40-90	K-600 -3MG70	K-600 -3EG70
	70-160	K-600 -3MG125	K-600 -3EG125
	120-285	K-600 -3MG225	K-600 -3EG225
	250-500	K-600 -3MG400	K-600 -3EG400
	400-750	K-600 -3MG600	K-600 -3EG600
PB-1600	500-1250 1000-2000	PB-1600-3MG1000 PB-1600-3MG1600	PB-1600-3EG1000 PB-1600-3EG1600
PB-2000	1000-2500	PB-2000-3MG2000	PB-2000-3EG2000
K-3000	1600-3800	K-3000-3MG3000	K-3000-3EG3000
K-4000	2000-5000	K-4000-3MG4000	K-4000-3EG4000

*For 2 pole breaker catalog numbers replace 3M or 3E with 2M or 2E.

GENERAL: Manually operated breakers are equipped with trip free closing mechanism, and push button trip. Electrically operated breakers include trip free closing mechanism, push button closing and tripping, control relays, shunt trip, and one spare auxiliary contact (in addition to those required for push button and indicating lights) for customer's use.

Breaker Type	Operation	Poles	Price (Net)
K-225	Manual	2 3	\$ 635. 705.
	Electrical	2 3	960. 1065.
K-600	Manual	2 3	775. 860.
	Electrical	2 3	1085. 1210.
PB-1600	Manual	2 3	1870. 2080.
	Electrical	2 3	2535. 2825.
PB-2000	Manual	2 3	2655. 2880.
	Electrical	2 3	3410. 3630.
K-3000	Manual	2 3	5860. 6430.
	Electrical	2 3	5860. 6430.
K-4000	Manual	2 3	8395. 9215.
	Electrical	2 3	8395. 9215.

ACCESSORIES*

Shunt Trip Device (Included on E.O. breakers). For M.O. breaker including 2 N.C. and 1 N.O. spare auxiliary switches, add

Shunt Close available on PB-1600 and PB-2000 only.

Undervoltage Trip

Instantaneous type, add

Time delay type, add

Auxiliary Switches

For four contact block, add

For 2 four contact blocks, add

Alarm Switch (Hand reset)

Switch closes when breaker is tripped by overcurrent mechanisms, add

Push Button and Indicating Lights (For E.O. breakers only—remote operation)

Neutral Stud (groundable) 100% neutral, add

Key Interlock, add

*Add accessory form letters to catalog number and separate by commas. Example: PB-1600-3MG1600 Form ST, SN, K1

	Form Letters	K-225 and K-600	PB-1600 and PB-2000	K-3000	K-4000
Shunt Trip Device (Included on E.O. breakers). For M.O. breaker including 2 N.C. and 1 N.O. spare auxiliary switches, add	Form ST	\$110.	\$110.	\$110.	\$110.
Shunt Close available on PB-1600 and PB-2000 only.	Form SC		110.		
Undervoltage Trip					
Instantaneous type, add	Form UT-1	110.	110.	110.	110.
Time delay type, add	Form UT-2	160.	160.	160.	160.
Auxiliary Switches					
For four contact block, add	Form AU-1	75.	75.	75.	75.
For 2 four contact blocks, add	Form AU-2	150.	150.	150.	150.
Alarm Switch (Hand reset)					
Switch closes when breaker is tripped by overcurrent mechanisms, add	Form AS	110.	110.	110.	110.
Push Button and Indicating Lights (For E.O. breakers only—remote operation)					
Neutral Stud (groundable) 100% neutral, add	Form SN	95.	145.	275.	275.
Key Interlock , add	Form K1	95.	95.	95.	95.

Refer to Class 9001 Devices

Refer to Catalog Section 670 for detailed description and dimensions.

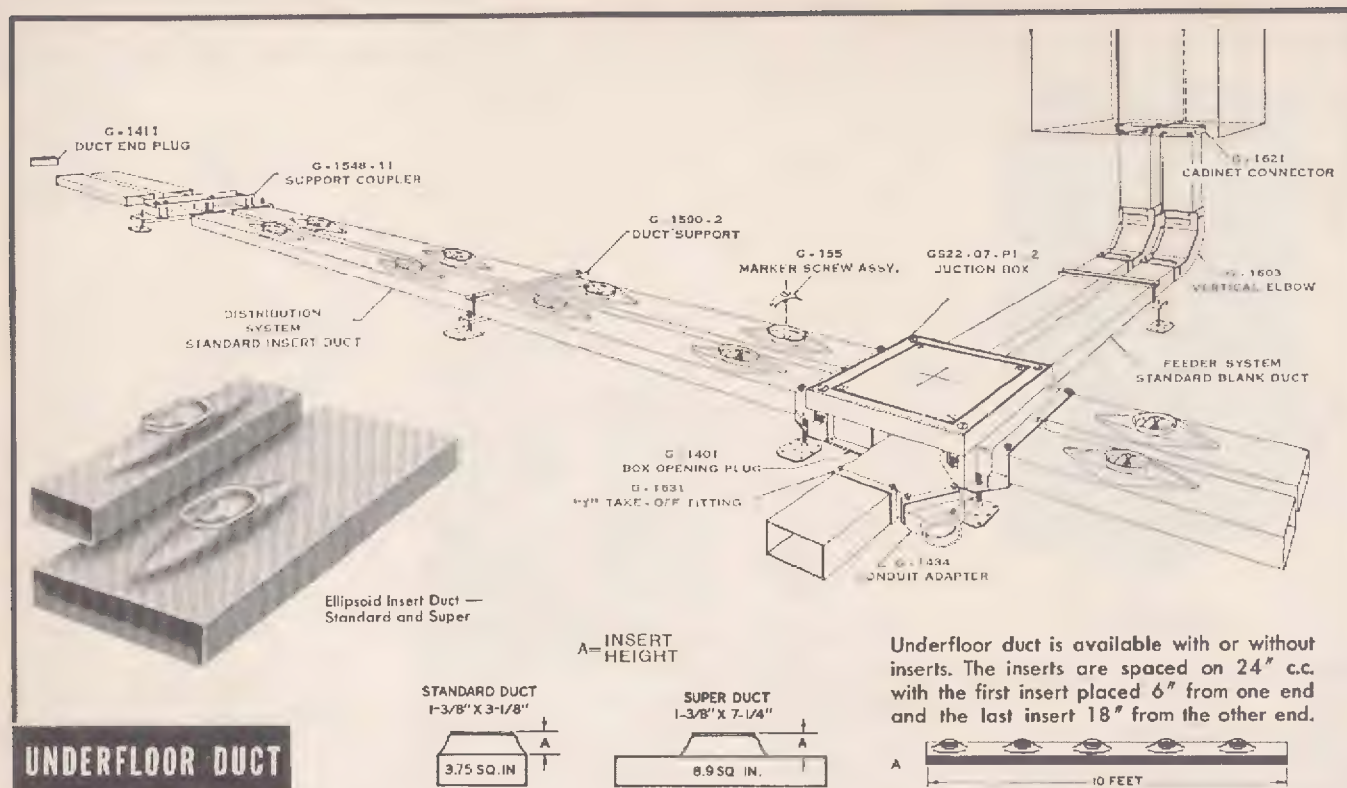
FOR BUSWAY ADAPTOR CUBICLES REFER TO I-LINE BUSWAYS



SCHEDULE D DISCOUNT

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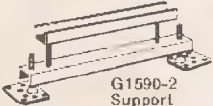
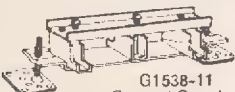

UNDERFLOOR DUCT



STANDARD DUCT					SUPER DUCT				
Catalog Number	Insert Height	Length	Wt. Per Ft.	Price Per Ft.	Catalog Number	Insert Height	Length	Wt. Per Ft.	Price Per Ft.
GD100A	Blank	10'	2.1	\$1.20	GD200A	Blank	10'	3.9	\$3.29
GD107A	7/8"	10'	2.3	1.53	GD207A	7/8"	10'	3.8	3.92
GD113A	1 1/8"	10'	2.3	1.53	GD213A	1 1/8"	10'	3.9	3.92
GD117A	1 3/8"	10'	2.3	1.69	GD217A	1 3/8"	10'	3.9	4.35
GD123A	2 1/8"	10'	2.1	1.69	GD223A	2 1/8"	10'	4.0	4.35
GD127A	2 3/8"	10'	2.1	1.69	GD227A	2 3/8"	10'	4.0	4.35
GD133A	3 1/8"	10'	2.2	1.69	GD233A	3 1/8"	10'	4.0	4.35

NOTE: Prices for insert duct with inserts on 12", 15", 30" centers available upon request.

DUCT SUPPORT COUPLERS AND DUCT SUPPORTS


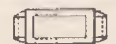
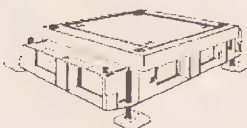
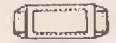

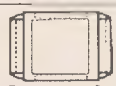
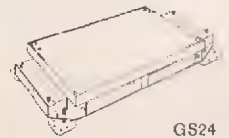


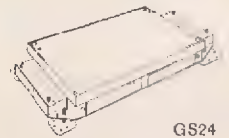


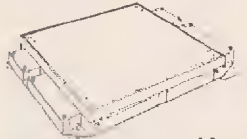
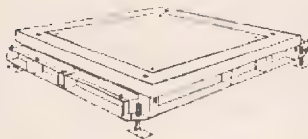
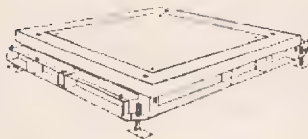


Item	Description	Catalog Number	Std. Duct Capacity	Weight Each	Price Each
 G1548-11 Support Coupler	Bottom bridge is formed of channel for stronger support. Used wherever there is at least 1/2" clearance under duct. Furnished with 3" leveling legs and hold-down feet.	G1548-1-3	1 Std.	1.7 lbs.	\$ 3.30
		G1548-11-3	2 Std.	2.6 lbs.	4.80
		G1548-2-3	1 Super	2.6 lbs.	4.80
		G1548-111-3	3 Std.	3.5 lbs.	7.00
		G1548-12-3	1 Std./1 Super	3.5 lbs.	7.00
		G1548-112-3	2 Std./1 Super	4.4 lbs.	9.20
		G1548-21-3	2 Super	4.4 lbs.	9.20
		G1548-122-3	1 Std./2 Super	5.3 lbs.	11.30
		G1548-212-3	1 Std./2 Super	5.3 lbs.	11.30
 G1590-2 Support	Used with G-1548 series support coupler. Also has stronger bottom bridge and is furnished with 3" leveling legs and hold-down feet.	G1590-1-3	1 duct	.7 lbs.	2.20
		G1590-2-3	2 ducts	1.0 lbs.	2.40
		G1590-3-3	3 ducts	1.5 lbs.	2.70
		G1590-4-3	4 ducts	1.8 lbs.	3.30
		G1590-5-3	5 ducts	2.0 lbs.	3.90
 G1538-11 Support Coupler	Bottom bridge is flat to allow duct to be used in 2 1/2" FILL on structural slab. Also used in deeper pours where duct must be within 1/8" of form. Furnished with 2" leveling legs and hold-down feet.	G1538-1-2	1 Std.	1.6 lbs.	3.30
		G1538-11-2	2 Std.	2.5 lbs.	4.80
		G1538-2-2	1 Super	2.5 lbs.	4.80
		G1538-111-2	3 Std.	3.4 lbs.	7.00
		G1538-12-2	1 Std./1 Super	3.4 lbs.	7.00
		G1538-112-2	2 Std./1 Super	4.4 lbs.	9.20
		G1538-22-2	2 Super	4.4 lbs.	9.20
		G1538-122-2	1 Std./2 Super	5.2 lbs.	11.30
		G1538-212-2	1 Std./2 Super	5.2 lbs.	11.30
 G1580-2 Support	Used with G-1538 series support coupler. Also has flat-bottom bridge and is furnished with 2" leveling legs and hold-down feet.	G1580-1-2	1 duct	.7 lbs.	2.20
		G1580-2-2	2 ducts	.9 lbs.	2.40
		G1580-3-2	3 ducts	1.4 lbs.	2.70
For a 4 or 5 duct support use appropriate G1538 support coupler.					

For longer leg add suffix, e.g.: G1548-2-6 designates 6" leveling leg. See page 91 for lengths available.



UNDERFLOOR DUCT

SINGLE LEVEL JUNCTION BOXES

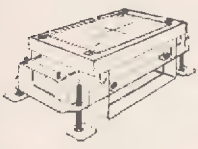

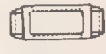
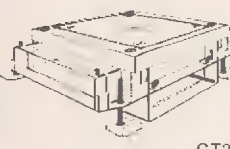
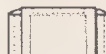

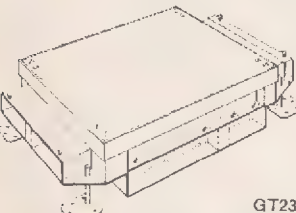
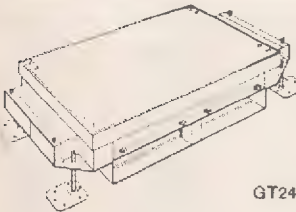
	Description	Insert Height	Catalog Number	Box Height		Weight Each	Price Each
				Min.	Max.		
 GS12	 1 Std. Duct by 1 Std. Duct Single Service	7/8"	GS11-07PO-2	2 1/2"	3"	10.2 lbs.	\$ 38.
		1 1/8"	GS11-13PO-2	2 3/4"	3 1/2"	10.6 lbs.	38.
		1 1/4"	GS11-17PO-2	3"	4"	11.0 lbs.	38.
		2 1/8"	GS11-23PO-2	3 3/4"	4 1/2"	11.4 lbs.	38.
		2 3/8"	GS11-27PO-2	4"	5"	11.8 lbs.	42.
		3 1/8"	GS11-33PO-2	4 3/4"	5 1/2"	12.2 lbs.	42.
 GS22	 1 Std. Duct by 1 Super Duct Single Service	7/8"	GS12-07PO-2	2 1/2"	3"	9.8 lbs.	51.
		1 1/8"	GS12-13PO-2	2 3/4"	3 1/2"	10.1 lbs.	51.
		1 1/4"	GS12-17PO-2	3"	4"	10.4 lbs.	51.
		2 1/8"	GS12-23PO-2	3 3/4"	4 1/2"	10.7 lbs.	51.
		2 3/8"	GS12-27PO-2	4"	5"	11.0 lbs.	57.
		3 1/8"	GS12-33PO-2	4 3/4"	5 1/2"	11.3 lbs.	57.
 GS23	 1 Super Duct by 1 Super Duct Single Service	7/8"	GS22-07PO-2	2 1/2"	3"	15.5 lbs.	64.
		1 1/8"	GS22-13PO-2	2 3/4"	3 1/2"	16.2 lbs.	64.
		1 1/4"	GS22-17PO-2	3"	4"	16.9 lbs.	64.
		2 1/8"	GS22-23PO-2	3 3/4"	4 1/2"	17.6 lbs.	64.
		2 3/8"	GS22-27PO-2	4"	5"	18.3 lbs.	70.
		3 1/8"	GS22-33PO-2	4 3/4"	5 1/2"	19.0 lbs.	70.
 GS24	 2 Std. Duct by 2 Std. Duct Two Service	7/8"	GS22-07P1-2	2 1/2"	3"	17.6 lbs.	64.
		1 1/8"	GS22-13P1-2	2 3/4"	3 1/2"	18.3 lbs.	64.
		1 1/4"	GS22-17P1-2	3"	4"	19.0 lbs.	64.
		2 1/8"	GS22-23P1-2	3 3/4"	4 1/2"	19.7 lbs.	64.
		2 3/8"	GS22-27P1-2	4"	5"	20.4 lbs.	70.
		3 1/8"	GS22-33P1-2	4 3/4"	5 1/2"	21.1 lbs.	70.
 GS23	Std. Std. by Std. Super	7/8"	GS23-07P1-2	2 1/2"	3"	24.5 lbs.	83.
		1 1/8"	GS23-13P1-2	2 3/4"	3 1/2"	25.0 lbs.	83.
		1 1/4"	GS23-17P1-2	3"	4"	25.5 lbs.	83.
		2 1/8"	GS23-23P1-2	3 3/4"	4 1/2"	26.0 lbs.	83.
		2 3/8"	GS23-27P1-2	4"	5"	26.5 lbs.	92.
		3 1/8"	GS23-33P1-2	4 3/4"	5 1/2"	27.0 lbs.	92.
 GS24	Std. Std. by Super Super	7/8"	GS24-07P1-2	2 1/2"	3"	30.5 lbs.	92.
		1 1/8"	GS24-13P1-2	2 3/4"	3 1/2"	31.0 lbs.	92.
		1 1/4"	GS24-17P1-2	3"	4"	31.6 lbs.	92.
		2 1/8"	GS24-23P1-2	3 3/4"	4 1/2"	32.2 lbs.	92.
		2 3/8"	GS24-27P1-2	4"	5"	32.8 lbs.	101.
		3 1/8"	GS24-33P1-2	4 3/4"	5 1/2"	33.5 lbs.	101.
 GS33	Std. Super by Std. Super	7/8"	GS33-07P1-2	2 1/2"	3"	35.0 lbs.	101.
		1 1/8"	GS33-13P1-2	2 3/4"	3 1/2"	35.5 lbs.	101.
		1 1/4"	GS33-17P1-2	3"	4"	36.0 lbs.	101.
		2 1/8"	GS33-23P1-2	3 3/4"	4 1/2"	36.6 lbs.	101.
		2 3/8"	GS33-27P1-2	4"	5"	37.3 lbs.	111.
		3 1/8"	GS33-33P1-2	4 3/4"	5 1/2"	38.0 lbs.	111.
 GS33	Std. Std. Std. by Std. Std. Std.	7/8"	GS33-07P3-2	2 1/2"	3"	36.0 lbs.	101.
		1 1/8"	GS33-13P3-2	2 3/4"	3 1/2"	36.5 lbs.	101.
		1 1/4"	GS33-17P3-2	3"	4"	37.0 lbs.	101.
		2 1/8"	GS33-23P3-2	3 3/4"	4 1/2"	37.6 lbs.	101.
		2 3/8"	GS33-27P3-2	4"	5"	38.2 lbs.	111.
		3 1/8"	GS33-33P3-2	4 3/4"	5 1/2"	38.9 lbs.	111.
 GS34	Std. Super by Super Super	7/8"	GS34-07P1-2	2 1/2"	3"	44.0 lbs.	133.
		1 1/8"	GS34-13P1-2	2 3/4"	3 1/2"	44.5 lbs.	133.
		1 1/4"	GS34-17P1-2	3"	4"	45.0 lbs.	133.
		2 1/8"	GS34-23P1-2	3 3/4"	4 1/2"	45.5 lbs.	133.
		2 3/8"	GS34-27P1-2	4"	5"	46.0 lbs.	164.
		3 1/8"	GS34-33P1-2	4 3/4"	5 1/2"	46.5 lbs.	164.
 GS44	Super Super by Super Super	7/8"	GS44-07P1-2	2 1/2"	3"	52.5 lbs.	164.
		1 1/8"	GS44-13P1-2	2 3/4"	3 1/2"	53.0 lbs.	164.
		1 1/4"	GS44-17P1-2	3"	4"	53.5 lbs.	164.
		2 1/8"	GS44-23P1-2	3 3/4"	4 1/2"	54.0 lbs.	164.
		2 3/8"	GS44-27P1-2	4"	5"	54.6 lbs.	181.
		3 1/8"	GS44-33P1-2	4 3/4"	5 1/2"	55.3 lbs.	181.
 GS44	Std. Std. Super by Std. Std. Super	7/8"	GS44-07P3-2	2 1/2"	3"	53.0 lbs.	164.
		1 1/8"	GS44-13P3-2	2 3/4"	3 1/2"	53.5 lbs.	164.
		1 1/4"	GS44-17P3-2	3"	4"	54.0 lbs.	164.
		2 1/8"	GS44-23P3-2	3 3/4"	4 1/2"	54.5 lbs.	164.
		2 3/8"	GS44-27P3-2	4"	5"	55.2 lbs.	181.
		3 1/8"	GS44-33P3-2	4 3/4"	5 1/2"	55.9 lbs.	181.
 GS55	Std. Super Super by Std. Super Super	7/8"	GS55-07P3-2	2 1/2"	3"	80.2 lbs.	208.
		1 1/8"	GS55-13P3-2	2 3/4"	3 1/2"	81.0 lbs.	208.
		1 1/4"	GS55-17P3-2	3"	4"	81.7 lbs.	208.
		2 1/8"	GS55-23P3-2	3 3/4"	4 1/2"	82.2 lbs.	208.
		2 3/8"	GS55-27P3-2	4"	5"	82.8 lbs.	229.
		3 1/8"	GS55-33P3-2	4 3/4"	5 1/2"	83.5 lbs.	229.
 GS55	Super Std. Super by Super Std. Super	7/8"	GS55-07P7-2	2 1/2"	3"	80.8 lbs.	208.
		1 1/8"	GS55-13P7-2	2 3/4"	3 1/2"	81.0 lbs.	208.
		1 1/4"	GS55-17P7-2	3"	4"	81.5 lbs.	208.
		2 1/8"	GS55-23P7-2	3 3/4"	4 1/2"	82.2 lbs.	208.
		2 3/8"	GS55-27P7-2	4"	5"	82.8 lbs.	229.
		3 1/8"	GS55-33P7-2	4 3/4"	5 1/2"	83.5 lbs.	229.

Suffix -2 designates length of leveling leg. Standard leveling leg is 2" long. For longer leg change suffix accordingly. See page 44 for lengths available.



UNDERFLOOR DUCT

TWO LEVEL JUNCTION BOXES

	Description	Insert Height (Upper level duct)	Catalog Number	Box Height		Weight Each	Price Each
				Min.	Max.		
 GT12	 1 Duct by 1 Duct Single Service	$\frac{7}{8}$ " $1\frac{1}{8}$ " $1\frac{1}{2}$ " $2\frac{1}{8}$ " $2\frac{1}{2}$ " $3\frac{1}{8}$ "	GT11-07PO-3 GT11-13PO-3 GT11-17PO-3 GT11-23PO-3 GT11-27PO-3 GT11-33PO-3	$4\frac{1}{4}$ " $4\frac{1}{2}$ " $4\frac{3}{4}$ " $5\frac{1}{4}$ " $5\frac{3}{4}$ " $6\frac{1}{4}$ "	$4\frac{1}{2}$ " $5\frac{1}{8}$ " $5\frac{1}{2}$ " $6\frac{1}{8}$ " $6\frac{1}{2}$ " $7\frac{1}{8}$ "	10.8 lbs. 11.1 lbs. 11.4 lbs. 11.7 lbs. 12.0 lbs. 12.3 lbs.	\$ 41. 41. 41. 41. 46. 46.
	 1 Duct by 2 Duct Single Service	$\frac{7}{8}$ " $1\frac{1}{8}$ " $1\frac{1}{2}$ " $2\frac{1}{8}$ " $2\frac{1}{2}$ " $3\frac{1}{8}$ "	GT12-07PO-3 GT12-13PO-3 GT12-17PO-3 GT12-23PO-3 GT12-27PO-3 GT12-33PO-3	$4\frac{1}{4}$ " $4\frac{1}{2}$ " $4\frac{3}{4}$ " $5\frac{1}{4}$ " $5\frac{3}{4}$ " $6\frac{1}{4}$ "	$4\frac{1}{2}$ " $5\frac{1}{8}$ " $5\frac{1}{2}$ " $6\frac{1}{8}$ " $6\frac{1}{2}$ " $7\frac{1}{8}$ "	10.4 lbs. 10.7 lbs. 11.0 lbs. 11.3 lbs. 11.6 lbs. 11.9 lbs.	57. 57. 57. 57. 64. 64.
 GT22	 2 Duct by 2 Duct Single Service	$\frac{7}{8}$ " $1\frac{1}{8}$ " $1\frac{1}{2}$ " $2\frac{1}{8}$ " $2\frac{1}{2}$ " $3\frac{1}{8}$ "	GT22-07PO-3 GT22-13PO-3 GT22-17PO-3 GT22-23PO-3 GT22-27PO-3 GT22-33PO-3	$4\frac{1}{4}$ " $4\frac{1}{2}$ " $4\frac{3}{4}$ " $5\frac{1}{4}$ " $5\frac{3}{4}$ " $6\frac{1}{4}$ "	$4\frac{1}{2}$ " $5\frac{1}{8}$ " $5\frac{1}{2}$ " $6\frac{1}{8}$ " $6\frac{1}{2}$ " $7\frac{1}{8}$ "	17.4 lbs. 18.1 lbs. 18.8 lbs. 19.5 lbs. 20.2 lbs. 20.9 lbs.	70. 70. 70. 70. 76. 76.
	 2 Duct by 2 Duct Two Service	$\frac{7}{8}$ " $1\frac{1}{8}$ " $1\frac{1}{2}$ " $2\frac{1}{8}$ " $2\frac{1}{2}$ " $3\frac{1}{8}$ "	GT22-07PI-3 GT22-13PI-3 GT22-17PI-3 GT22-23PI-3 GT22-27PI-3 GT22-33PI-3	$4\frac{1}{4}$ " $4\frac{1}{2}$ " $4\frac{3}{4}$ " $5\frac{1}{4}$ " $5\frac{3}{4}$ " $6\frac{1}{4}$ "	$4\frac{1}{2}$ " $5\frac{1}{8}$ " $5\frac{1}{2}$ " $6\frac{1}{8}$ " $6\frac{1}{2}$ " $7\frac{1}{8}$ "	19.1 lbs. 19.8 lbs. 20.5 lbs. 21.2 lbs. 22.9 lbs. 23.6 lbs.	70. 70. 70. 70. 76. 76.
 GT23	Std. Std.-Upper by Std. Super-Lower	$\frac{7}{8}$ " $1\frac{1}{8}$ " $1\frac{1}{2}$ " $2\frac{1}{8}$ " $2\frac{1}{2}$ " $3\frac{1}{8}$ "	GT23-07PI-3 GT23-13PI-3 GT23-17PI-3 GT23-23PI-3 GT23-27PI-3 GT23-33PI-3	$4\frac{1}{4}$ " $4\frac{1}{2}$ " $4\frac{3}{4}$ " $5\frac{1}{4}$ " $5\frac{3}{4}$ " $6\frac{1}{4}$ "	$4\frac{1}{2}$ " $5\frac{1}{8}$ " $5\frac{1}{2}$ " $6\frac{1}{8}$ " $6\frac{1}{2}$ " $7\frac{1}{8}$ "	25.0 lbs. 25.5 lbs. 26.0 lbs. 26.6 lbs. 27.2 lbs. 27.9 lbs.	91. 91. 91. 91. 101. 101.
	Std. Std.-Upper by Super Super-Lower	$\frac{7}{8}$ " $1\frac{1}{8}$ " $1\frac{1}{2}$ " $2\frac{1}{8}$ " $2\frac{1}{2}$ " $3\frac{1}{8}$ "	GT24-07PI-3 GT24-13PI-3 GT24-17PI-3 GT24-23PI-3 GT24-27PI-3 GT24-33PI-3	$4\frac{1}{4}$ " $4\frac{1}{2}$ " $4\frac{3}{4}$ " $5\frac{1}{4}$ " $5\frac{3}{4}$ " $6\frac{1}{4}$ "	$4\frac{1}{2}$ " $5\frac{1}{8}$ " $5\frac{1}{2}$ " $6\frac{1}{8}$ " $6\frac{1}{2}$ " $7\frac{1}{8}$ "	31.5 lbs. 32.0 lbs. 32.5 lbs. 33.1 lbs. 33.7 lbs. 34.4 lbs.	111. 111. 111. 111. 138. 138.
 GT24	Std. Super-Upper by Super Super-Lower	$\frac{7}{8}$ " $1\frac{1}{8}$ " $1\frac{1}{2}$ " $2\frac{1}{8}$ " $2\frac{1}{2}$ " $3\frac{1}{8}$ "	GT34-07PI-3 GT34-13PI-3 GT34-17PI-3 GT34-23PI-3 GT34-27PI-3 GT34-33PI-3	$4\frac{1}{4}$ " $4\frac{1}{2}$ " $4\frac{3}{4}$ " $5\frac{1}{4}$ " $5\frac{3}{4}$ " $6\frac{1}{4}$ "	$4\frac{1}{2}$ " $5\frac{1}{8}$ " $5\frac{1}{2}$ " $6\frac{1}{8}$ " $6\frac{1}{2}$ " $7\frac{1}{8}$ "	44.6 lbs. 45.2 lbs. 45.9 lbs. 46.7 lbs. 47.5 lbs. 48.3 lbs.	159. 159. 159. 159. 196. 196.
	Std. Super-Upper by Super Super-Lower	$\frac{7}{8}$ " $1\frac{1}{8}$ " $1\frac{1}{2}$ " $2\frac{1}{8}$ " $2\frac{1}{2}$ " $3\frac{1}{8}$ "	GT34-07PI-3 GT34-13PI-3 GT34-17PI-3 GT34-23PI-3 GT34-27PI-3 GT34-33PI-3	$4\frac{1}{4}$ " $4\frac{1}{2}$ " $4\frac{3}{4}$ " $5\frac{1}{4}$ " $5\frac{3}{4}$ " $6\frac{1}{4}$ "	$4\frac{1}{2}$ " $5\frac{1}{8}$ " $5\frac{1}{2}$ " $6\frac{1}{8}$ " $6\frac{1}{2}$ " $7\frac{1}{8}$ "	44.6 lbs. 45.2 lbs. 45.9 lbs. 46.7 lbs. 47.5 lbs. 48.3 lbs.	159. 159. 159. 159. 196. 196.

Suffix -3 designates length of leveling leg. Standard leveling leg is 3" long. For longer leg change suffix accordingly. See page 44 for lengths available.

PANS FOR JUNCTION BOXES

TERRAZZO

Catalog Number	Height	Junction Box	Price Each
G212-5,-7	$\frac{5}{8}$ " to $\frac{7}{8}$ "	GS11, GS12, GT11, GT12	\$ 33.
G222-5,-7	$\frac{5}{8}$ " to $\frac{7}{8}$ "	GS22, GT22	43.
G223-5,-7	$\frac{5}{8}$ " to $\frac{7}{8}$ "	GS23, GT23	49.
G224-5,-7	$\frac{5}{8}$ " to $\frac{7}{8}$ "	GS24, GT24	53.
G233-5,-7	$\frac{5}{8}$ " to $\frac{7}{8}$ "	GS33	53.
G234-5,-7	$\frac{5}{8}$ " to $\frac{7}{8}$ "	GS34, GT34	64.
G244-5,-7	$\frac{5}{8}$ " to $\frac{7}{8}$ "	GS44	80.
G255-5,-7	$\frac{5}{8}$ " to $\frac{7}{8}$ "	GS55	106.






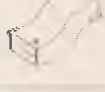

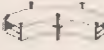











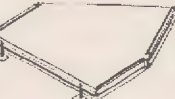






CARPET

Catalog Number	Height	Junction Box	Price Each
G312	$\frac{3}{8}$ " to $\frac{1}{2}$ "	GS11, GS12, GT11, GT12	\$17.
G322	$\frac{3}{8}$ " to $\frac{1}{2}$ "	GS22, GT22	17.
G323	$\frac{3}{8}$ " to $\frac{1}{2}$ "	GS23, GT23	21.
G324	$\frac{3}{8}$ " to $\frac{1}{2}$ "	GS24, GT24	21.
G333	$\frac{3}{8}$ " to $\frac{1}{2}$ "	GS33	27.
G334	$\frac{3}{8}$ " to $\frac{1}{2}$ "	GS34, GT34	27.
G344	$\frac{3}{8}$ " to $\frac{1}{2}$ "	GS44	37.
G355	$\frac{3}{8}$ " to $\frac{1}{2}$ "	GS55	37.



UNDERFLOOR DUCT

ACCESSORIES

ITEM	Catalog Number	Weight Each	Price Each	ITEM	Catalog Number	Weight Each	Price Each
 BOX OPENING PLUGS	STANDARD G1401 SUPER G1402	.15 lbs. .30 lbs.	\$.40 .60	 VERTICAL ELBOWS	STANDARD G1603 SUPER G1604	2.2 lbs. 3.5 lbs.	\$ 6.60 13.20
 DUCT END PLUGS	STANDARD G1411 SUPER G1412	14 lbs. .28 lbs.	.40 .60	 OFFSET ELBOWS STANDARD	G1605-075 G1605-150 G1605-200	3.2 lbs. 3.2 lbs. 3.2 lbs.	6.60 6.60 6.60
 2" CONDUIT ADAPTER AND CABINET CONNECTOR FOR 3" DIA. K.O.	STANDARD G1432	1.5 lbs.	4.40	 SUPER Leveling screws not included.	G1606-075 G1606-150 G1606-200	6.0 lbs. 6.0 lbs. 6.0 lbs.	13.20 13.20 13.20
 CONDUIT ADAPTER For three 1 1/4" conduits reduced to two 3/4" and one 1" conduit.	SUPER G1433	2.0 lbs.	6.00	 90° HORIZONTAL ELBOWS Leveling screws not included	STANDARD G1611 SUPER G1612	7.0 lbs. 16.5 lbs.	13.20 33.00
 CONDUIT ADAPTERS 1 1/4" 2-1 1/4"	G1434 G1435	1.0 lbs. 1.4 lbs.	3.30 4.40	 HORIZ. ADJUSTABLE ELBOW Allow a turn from 15° to 30°	STANDARD G1615 SUPER G1616	1.2 lbs. 2.9 lbs.	3.30 5.50
 CONDUIT ADAPTERS 1/2" 3/4" 1"	G1436 G1437 G1438	1.0 lbs. 1.0 lbs. 1.0 lbs.	3.30 3.30 3.30	 VERTICAL ADJUSTABLE ELBOW Used for offsetting duct runs where standard offsets are not applicable.	STANDARD G1617 SUPER G1618	2.0 lbs. 4.0 lbs.	6.60 13.20
 REDUCER BUSHINGS 2" to 1 1/2" 1 1/4" to 3/4" 1 1/4" to 1"	G1455 G1457 G1458	10 lbs. .7 lbs. .5 lbs.	1.60 1.60 1.60	 HORIZONTAL ELBOWS 45° For Super 45° Turn Use Two G1616	STANDARD G1619	2.0 lbs.	6.60
 SLEEVE COUPLING Permits duct ends to butt. Four bonding screws.	STANDARD G1463 SUPER G1464	.5 lbs. 1.0 lbs.	1.40 2.90	 CABINET CONNECTORS	STANDARD G1621 *G1622S SUPER G1622 ▲G1623	.5 lbs. 1.0 lbs. .9 lbs. 1.5 lbs.	2.40 4.40 4.40 8.70
 EXPANSION COUPLING	STANDARD G1465 SUPER G1466	2.0 lbs. 4.0 lbs.	11.00 22.00	 Y TAKE-OFF FITTING Use at box openings or at couplers for conduit or duct take-offs. *30° takeoff †45° takeoff	STANDARD *G1631 †G1633 SUPER *G1632 †G1634	2.7 lbs. 2.7 lbs. 4.7 lbs. 4.7 lbs.	4.40 7.60 6.60 11.00
 SEALING COMPOUND 1 gallon container 1/10 gallon disposable container for caulking gun.	G1469 G1470	15 lbs. 1.5 lbs.	4.40 .80	 SUPER BY SUPER BY SUPER Y TAKE-OFF FITTING 30°	SUPER G1637	9.0 lbs.	22.00
 INSERT TO CONDUIT ADAPTER 2" I.P.S. to 1 1/2" 2" I.P.S. to 3/4" 2" I.P.S. to 1" 2" I.P.S. to 1 1/4" 2" I.P.S. to 1 1/2"	G1480 G1481 G1482 G1483 G1484	.75 lbs. .70 lbs. .60 lbs. .50 lbs. .45 lbs.	2.20 2.20 2.20 2.20 2.20				
 Ellipsoid to 3/4" Ellipsoid to 1" Ellipsoid to 1 1/4" Ellipsoid to 1 1/2" Ellipsoid to 2"	G1485 G1486 G1487 G1488 G1489	.60 lbs. .55 lbs. .47 lbs. .38 lbs. .28 lbs.	2.20 2.20 2.20 2.20 4.40				
 REDUCING COUPLING Super to Standard	G1563	4.0 lbs.	13.20				
 INSERT CLOSING CAP	G153	10 lbs.	.30				
 MARKER SCREW ASSEMBLY	G155	10 lbs.	.70	 LEVELING LEGS 3/16" x 2" 3/16" x 3" 3/16" x 4" 3/16" x 6" 3/16" x 8" 3/16" x 10" 3/16" x 12" 3/16" x 14"	G1910-2 G1910-3 G1910-4 G1910-6 G1910-8 G1910-10 G1910-12 G1910-14	.19 lbs. .21 lbs. .23 lbs. .27 lbs. .31 lbs. .35 lbs. .39 lbs. .43 lbs.	.42 .48 .50 .56 .60 .64 .68 .72

Note Escutcheon washers for marker screws can be ordered separately if needed, no charge.
Available in unit package of 50 each only. Catalog Number G1413, 1413B & G1413R.



HEADERDUCT

Technical drawings of two components, GH1 and GH22. GH1 is a small, square, flat component with four mounting holes. GH22 is a larger, rectangular component with a raised central area and four mounting holes. The label 'GH22' is positioned to the right of the component, and 'GH1' is positioned to the left of the component.

Note: See super blank duct listing for 5', 6', 10' and 12' lengths. Access units are available to accommodate up to 5" slabs. *Access units are also available with 3", 4" or 3" x 6" openings and grommets.

GH3 Access Unit may be ordered separately for field installation.
Price **\$13.40** each. Order grommets from list below.

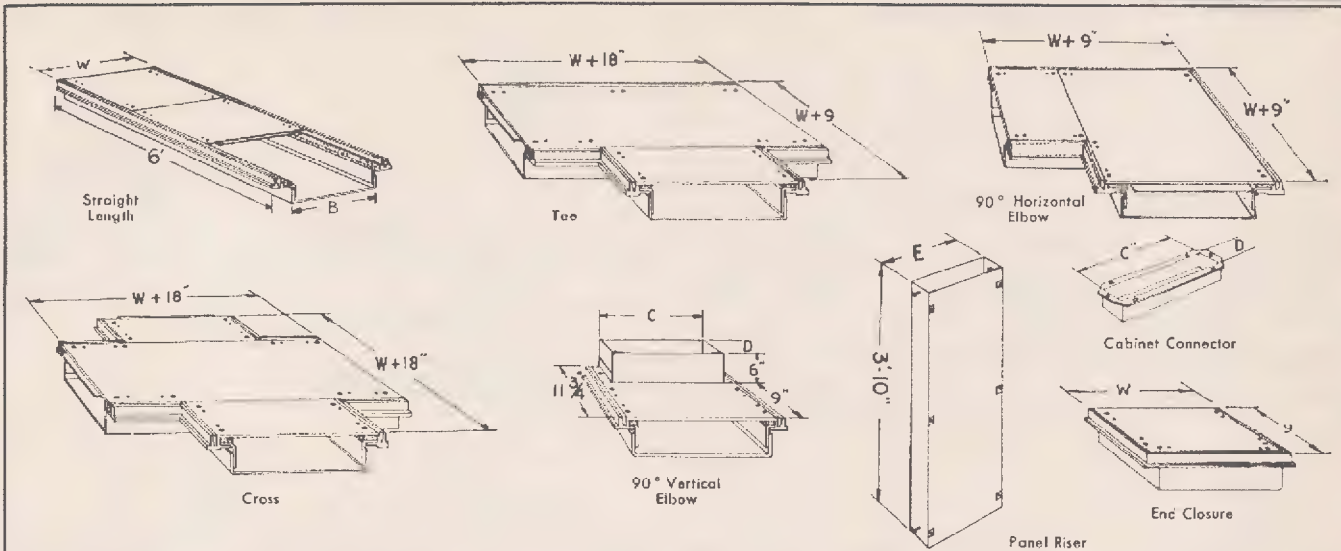
GROMMETS

NOTE: For afterset insert, see page 48.



TRENCH DUCT

COMPONENTS



1. Standard straight lengths are furnished with three 2 ft. cover plates per length. Trench "width" is cover plate width.
2. Legs of component pieces such as tees, horizontal ells, etc., are 9" long.
3. Tubs are manufactured of 14 ga. galvanized steel. Cover plates are 1/4" roller levelled steel, painted.
4. Depth is adjustable **before** concrete pour from 2 3/8" to 3 3/8".
5. Vertical ell, panel riser, and cabinet connector are manufactured to fit together with a height range of approximately 3' 10" to 4' 2".
6. Standard trench duct furnished with single tile trim for 1/8" tile.

Trench Width = W	B	C	D	E
9"	7.2"	7"	2.59"	7.22"
12"	10.2"	10"	2.59"	10.22"
18"	16.2"	16"	2.59"	16.22"
24"	22.2"	22"	2.59"	22.22"
30"	28.2"	28"	2.59"	28.22"
36"	34.2"	34"	2.59"	34.22"

PRICING

Catalog Number	Width	Per Foot	Complete Device	Catalog Number	Width	Labor Only	Complete Device		
Straight Length	TS3-0901172	9"	\$25.	\$150.	End Closure	TE3-0901109	9"	\$17.	\$36.
	TS3-1201172	12"	30.	180.		TE3-1201109	12"	20.	42.
	TS3-1801172	18"	33.	228.		TE3-1801109	18"	23.	52.
	TS3-2401172	24"	51.	306.		TE3-2401109	24"	27.	65.
	TS3-3001172	30"	64.	384.		TE3-3001109	30"	30.	77.
	TS3-3601172	36"	76.	456.		TE3-3601109	36"	33.	90.
Catalog Number	Width	Labor Only	Complete Device	Catalog Number	Width	Labor Only	Complete Device		
Tee	TT3-0901136	9"	160.	236.	Vertical Elbow	TV3-0901109	9"	42.	62.
	TT3-1201139	12"	190.	288.		TV3-1201109	12"	51.	73.
	TT3-1801145	18"	234.	376.		TV3-1801109	18"	59.	88.
	TT3-2401151	24"	276.	492.		TV3-2401109	24"	68.	106.
	TT3-3001157	30"	318.	620.		TV3-3001109	30"	76.	124.
	TT3-3601163	36"	360.	760.		TV3-3601109	36"	85.	142.
Catalog Number	Width	Labor Only	Complete Device	Catalog Number	Width	Labor Only	Complete Device		
Horizontal Elbow	TH3-0901127	9"	148.	206.	Cabinet Connector	TC3-09			21.
	TH3-1201130	12"	170.	244.		TC3-12			27.
	TH3-1801136	18"	190.	306.		TC3-18			32.
	TH3-2401142	24"	212.	390.		TC3-24			37.
	TH3-3001148	30"	254.	508.		TC3-30			42.
	TH3-3601154	36"	296.	640.		TC3-36			48.
Catalog Number	Width	Labor Only	Complete Device	Catalog Number	Width	Labor Only	Complete Device		
Cross	TX3-0901145	9"	190.	286.	Riser	TR3-0948			19.
	TX3-1201148	12"	234.	352.		TR3-1248			22.
	TX3-1801154	18"	266.	436.		TR3-1848			29.
	TX3-2401160	24"	318.	572.		TR3-2448			35.
	TX3-3001166	30"	370.	720.		TR3-3048			41.
	TX3-3601172	36"	424.	882.		TR3-3648			48.

PRICES FOR ADDITIONS AND SPECIAL FEATURES

1. For each foot of adjustable partition add \$4.00 per foot of partition.
2. For each 1" of depth beyond range of 2 3/8" to 3 3/8" add \$2.00 per foot of trench duct.
3. Jobs may be priced either of two ways. Either measure total footage of trench duct required and add "labor only" price for the devices (tees, ells, etc.) or convert footage to number of "complete devices" and price accordingly.

ORDERING INFORMATION REQUIRED

1. To secure best delivery, order standard parts as shown above. All lengths and items available other than shown but delivery times are naturally longer.
2. When adjustable partitions are desired, so state on order and send sketch dimensioning location.



UNDERFLOOR DUCT

SERVICE FITTINGS

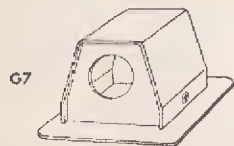
FOR HIGH POTENTIAL SERVICE



Dimensions: $4\frac{1}{8}$ " long; $4\frac{1}{8}$ " wide; $2\frac{1}{16}$ " high.

Catalog Number	Accommodates	Weight Each	Price Each
G1-DA	One standard single receptacle — 30 amp.	1.5 lbs.	\$11.00
G1-EA	One standard single receptacle — 50 amp.	1.5 lbs.	11.00
G2-BA	One standard duplex receptacle — 20 amp.	1.5 lbs.	11.00
G2-BB	Two standard duplex receptacles, back to back — 20 amp.	1.5 lbs.	11.00
G2-CA	One standard single receptacle — 20 amp.	1.5 lbs.	11.00
G2-CC	Two standard single receptacles, back to back — 20 amp.	1.5 lbs.	11.00

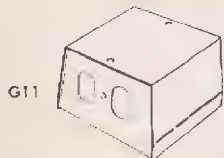
FOR HIGH POTENTIAL SERVICE



Dimensions: $2\frac{5}{8}$ " long; $2\frac{5}{8}$ " wide; $2\frac{3}{8}$ " high.

Catalog Number	Accommodates	Weight Each	Price Each
G7-CA	One single receptacle, #5258-15 amp. 125 volt 3 wire grounded U slot.	.75 lbs.	\$11.00
G7-CC	Two single receptacles, #5258-15 amp. 125 volt 3 wire grounded U slot. Back to back	.75 lbs.	11.00

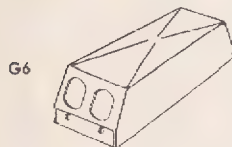
FOR HIGH POTENTIAL SERVICE



Dimensions: 4" long; $4\frac{1}{8}$ " wide; 3" high.

Catalog Number	Accommodates	Weight Each	Price Each
G11-BA	One standard duplex receptacle — 20 amp.	1.8 lbs.	\$13.00

FOR HIGH AND LOW POTENTIAL SERVICE



Dimensions: 10" long; 4" wide; $2\frac{1}{16}$ " high.

Catalog Number	Accommodates	Weight Each	Price Each
G6	One standard duplex receptacle, 20 amp. and up to a 3 Amphenol connector	2.1 lbs.	\$22.00

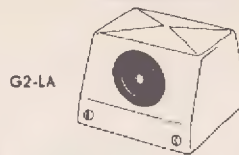
FOR HIGH OR LOW POTENTIAL SERVICE



Dimensions: $4\frac{1}{8}$ " long; $3\frac{5}{8}$ " wide; $2\frac{3}{8}$ " high.

Catalog Number	Accommodates	Weight Each	Price Each
G10	Receptacle or telephone jack or connecting block with appropriate cover plate which can be installed in a standard 2" x 4" wall box.	1.5 lbs.	\$11.00

FOR LOW POTENTIAL SERVICE

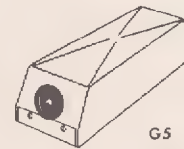


Dimensions: $4\frac{1}{8}$ " long; $4\frac{1}{8}$ " wide; $2\frac{1}{16}$ " high.

Catalog Number	Includes	Weight Each	Price Each
G2-LA	One insulated bushing with $\frac{3}{4}$ " dia. hole	1.5 lbs.	\$11.00
G2-LL	Two insulated bushings with $\frac{3}{4}$ " dia. hole	1.5 lbs.	11.00
G-133	Bracket assembly for four 44-A connector blocks.	1 lbs.	2.20

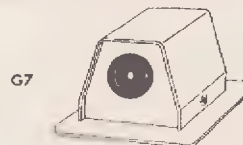
FOR LOW POTENTIAL SERVICE

Dimensions:
G3 $7\frac{1}{2}$ " Long x $4\frac{1}{4}$ " Wide x $1\frac{1}{8}$ " High.
G4 $9\frac{1}{2}$ " Long x $4\frac{1}{4}$ " Wide x $1\frac{1}{8}$ " High.
G5 10" Long x 4" Wide x $2\frac{1}{16}$ " High.



Catalog Number	Accommodates	Weight Each	Price Each
G3	Single Amphenol connector.	.6 lbs.	\$11.00
G4	Double Amphenol connector.	1.1 lbs.	13.20
G5-100	5 Amphenol connector or G132 bracket	2.6 lbs.	17.50
G-132	Bracket assembly for ten 44A connector blocks or equivalent.	.4 lbs.	2.20

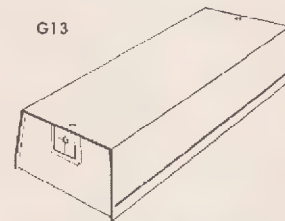
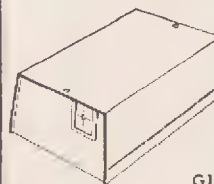
FOR LOW POTENTIAL SERVICE



Dimensions: $2\frac{5}{8}$ " long; $2\frac{5}{8}$ " wide; $2\frac{3}{8}$ " high.

Catalog Number	Includes	Weight Each	Price Each
G7-LA	One split rubber bushing with 1" dia. opening with diaphragm.	72 lbs.	\$11.00
G7-LL	Two split rubber bushings with 1" dia. openings with diaphragms. Back-to-back.	72 lbs.	11.00

Dimensions:
G12 $6\frac{1}{2}$ " long; $4\frac{3}{8}$ " wide; 3" high.
G13 $10\frac{1}{16}$ " long; $4\frac{3}{8}$ " wide; 3" high.



Catalog Number	Accommodates	Weight Each	Price Each
G12-LA	66E4 terminal block.	2.0 lbs.	\$17.00
G13-LA	5-Amphenol connector.	2.5 lbs.	21.00

ORDERING INSTRUCTIONS FOR SERVICE FITTINGS

Order by catalog number and suffix.

S1—Has components to adapt to any underfloor duct with 2" I.P.S. circular insert.

S2—Has components to adapt to any underfloor duct with 2" I.P.S. circular insert and ellipsoid inserts.

S3—Has components for only new ellipsoid inserts. S3 furnished unless otherwise requested.




All service fittings are stocked in brushed satin aluminum. For other finishes contact factory.



UNDERFLOOR DUCT

SERVICE FITTINGS



FLUSH FLOOR SERVICE FITTINGS

Item	Catalog Number	Includes	Weight Each	Price
 TOP MOUNTING Made of solid brass or aluminum plate, available in satin brass or satin aluminum finish only. Bevelled edge permits mounting above floor level. Can be used side by side or in any combination with other Square D service fittings. All high tension fittings shipped complete with devices as shown.	BRASS G601B G601C G601L	One 15 amp. 125 volt, 3 wire parallel blade, U slot receptacle. One 15 amp. 250 volt, 3 wire tandem blade, U slot receptacle. Accommodates one 47B, 47C or 47D telephone connecting block.	1.0 lbs. 1.0 lbs. 1.0 lbs.	\$15.30 14.20 13.20
	ALUMINUM G602B G602C G602L	One 15 amp. 125 volt, 3 wire parallel blade, U slot receptacle. One 15 amp. 250 volt, 3 wire tandem blade, U slot receptacle. Accommodates one 47B, 47C or 47D telephone connecting block.	1.0 lbs. 1.0 lbs. 1.0 lbs.	14.20 13.20 12.00
 FLUSH MOUNTING Made of solid brass or aluminum plate, available in satin brass or satin aluminum finish only. Square edge permits flush mounting in 1/2" tile floor. Can be used side by side or in any combination with other Square D service fittings. All high tension fittings shipped complete with devices as shown.	BRASS G603B G603C G603L	One 15 amp. 125 volt, 3 wire parallel blade, U slot receptacle. One 15 amp. 250 volt, 3 wire tandem blade, U slot receptacle. Accommodates one 47B, 47C or 47D telephone connecting block.	1.0 lbs. 1.0 lbs. 1.0 lbs.	15.30 14.20 13.20
	ALUMINUM G604B G604C G604L	One 15 amp. 125 volt, 3 wire parallel blade, U slot receptacle. One 15 amp. 250 volt, 3 wire tandem blade, U slot receptacle. Accommodates one 47B, 47C or 47D telephone connecting block.	1.0 lbs. 1.0 lbs. 1.0 lbs.	14.20 13.20 12.00
 BELL CAPS Made of quality cast brass or aluminum, available in satin brass or satin aluminum finish only. Can be used side by side or in any combination with other Square D service fittings, also with existing installations of flush floor fittings. All high tension fittings shipped complete with devices as shown.	BRASS G611B G611C G611L	One 15 amp. 125 volt, 3 wire parallel blade, U slot receptacle. One 15 amp. 250 volt, 3 wire tandem blade, U slot receptacle. Accommodates one 47B, 47C or 47D telephone connecting block.	3.0 lbs. 3.0 lbs. 3.0 lbs.	16.50 15.30 14.20
	ALUMINUM G612B G612C G612L	One 15 amp. 125 volt, 3 wire parallel blade, U slot receptacle. One 15 amp. 250 volt, 3 wire tandem blade, U slot receptacle. Accommodates one 47B, 47C or 47D telephone connecting block.	3.0 lbs. 3.0 lbs. 3.0 lbs.	15.30 14.20 13.20

STANDPIPE ASSEMBLY

Catalog Number	Pipe Size	H	Weight Each	Price Each	Catalog Number	Pipe Size	H	Weight Each	Price
BRASS G701-075-3 G701-100-3 G701-125-3 G701-150-3 G701-200-3	I.P.S. 3/4" 1" 1 1/4" 1 1/2" 2"	3" 3" 3" 3" 3"	1.3 lbs. 1.4 lbs. 1.5 lbs. 1.6 lbs. 1.6 lbs.	\$10.90 12.00 13.20 14.20 15.30	BRASS G701-075-6 G701-100-6 G701-125-6 G701-150-6 G701-200-6	I.P.S. 3/4" 1" 1 1/4" 1 1/2" 2"	6" 6" 6" 6" 6"	1.8 lbs. 2.0 lbs. 2.2 lbs. 2.5 lbs. 2.7 lbs.	\$15.30 17.00 18.60 19.60 21.30
ALUMINUM G702-075-3 G702-100-3 G702-125-3 G702-150-3 G702-200-3	3/4" 1" 1 1/4" 1 1/2" 2"	3" 3" 3" 3" 3"	.4 lbs. .4 lbs. .5 lbs. .5 lbs. .5 lbs.	8.70 10.00 10.90 12.00 13.20	ALUMINUM G702-075-6 G702-100-6 G702-125-6 G702-150-6 G702-200-6	3/4" 1" 1 1/4" 1 1/2" 2"	6" 6" 6" 6" 6"	.5 lbs. .5 lbs. .7 lbs. .7 lbs. .7 lbs.	12.00 13.70 15.30 17.00 18.60

ABANDONED OUTLET ASSEMBLY

Description	Catalog Number	Weight Each	Price	Description	Catalog Number	Weight Each	Price
Top Mounting 	BRASS G201	0.6 lbs.	\$ 4.40	Flush Mounting (For 1/2" Tile) 	BRASS G203	0.6 lbs.	\$ 4.40
	ALUMINUM G202	0.4 lbs.	4.40		ALUMINUM G204	0.4 lbs.	4.40

TOOLS

Hole saw for installing aftersets or grommets	G1705-2.5	.5 lbs.	\$22.00
	G1705-3	.5 lbs.	27.60
	G1705-4	.5 lbs.	33.00
Insert finder, electronic	G1710	10.0 lbs.	164.00
Insert finder, magnetic	G1711	1.0 lbs.	33.00
Drive tool for service fitting wedge screw	G1730	.3 lbs.	2.20

OTHER DUCT SYSTEM ADAPTERS

Adapts All Square D, G-1, G-2 & G-5 Service Fittings To:	Catalog Number	Weight Each	Price
Inserts with 1 1/2" I.P.S.	G992 AL	.2 lbs.	\$ 2.20
Inserts with 1.9" Sp Fine Thread	G991 AL	.2 lbs.	2.20
Inserts with 2" I.P.S.	G113	.2 lbs.	2.20

AFTERSSET INSERTS *

Inserts Heights	Catalog Number	Weight Each	Price
7/8"	G1491-07	.21 lbs.	\$2.20
1 3/8"	G1491-13	.33 lbs.	2.20
1 7/8"	G1491-17	.45 lbs.	2.80
2 3/8"	G1491-23	.57 lbs.	2.80
2 7/8"	G1491-27	.69 lbs.	3.30
3 3/8"	G1491-33	.81 lbs.	3.30
Afterset Holding Tongs	G1493	.01 lbs.	1.10

* See page 45 for closing caps for afterset inserts. For underfloor duct and cell floors.



TOTALLY ENCLOSED PLUG-IN DUCT—100 AMPERE

STRAIGHT LENGTHS AND FITTINGS

ALUMINUM

Component	3Ø-3W 600 V Max.		3Ø-4W 277/480 V.		1Ø-3W ▲120/240 V.	
	Cat. No.	Price	Cat. No.	Price	Cat. No.	Price
Straight Lengths—10 ft.	ST-13	\$42.	ST-14	\$55.	ST-13N	\$42.
	ST-13-5	29.	ST-14-5	36.	ST-13N-5	29.
	ST-13-3	26.	ST-14-3	29.	ST-13N-3	26.
	ST-13-2	21.	ST-14-2	24.	ST-13N-2	21.
	ST-13-1	16.	ST-14-1	17.	ST-13N-1	16.
Cable Tap Boxes—End Plug-In (100A.) Plug-In (60A.)	EB-13	29.	EB-14	39.	EB-13N	29.
	PIB-13	29.	PIB-14	39.	PIB-13N	29.
	PIB60-13	14.	PIB60-14	19.	PIB60-13N	19.
End Closure..	EC-1	6.	EC-1	6.	EC-1	8.
Outlet Cover..	OC-1	1.	OC-1	1.	OC-1	1.
†Extra Hangers—Edgewise..	EH-1	1.	EH-1	1.	EH-1	1.
	FH-1	1.	FH-1	1.	FH-1	1.
Elbows—Forward..	FE-13	29.	FE-14	37.	FE-13N	29.
	RE-13	29.	RE-14	37.	RE-13N	29.
	UE-13	29.	UE-14	37.	UE-13N	29.
	DE-13	29.	DE-14	37.	DE-13N	29.
	FEXE-13	64.	FEXE-14	77.	FEXE-13N	64.
Tees—Forward..	FT-13	42.	FT-14	56.	FT-13N	42.
	RT-13	42.	RT-14	56.	RT-13N	42.
	UT-13	42.	UT-14	56.	UT-13N	42.
	DT-13	42.	DT-14	56.	DT-13N	42.
Wall Flange—Slip-on..	WF-1	6.	WF-1	8.	WF-1	6.

† One edgewise hanger is included with each 10 feet of duct.
▲ Use 1Ø, 3W duct for 3Ø, 3W, 240 V, grounded BØ system.
For 480 V, 3Ø, 3W, grounded BØ system, consult factory.

SCHEDULE E1 DISCOUNT

PLUG-IN UNITS

CIRCUIT BREAKER ENCLOSURES

Enclosure Only (Price Circuit Breaker from Table Below)	3Ø, 3W.		3Ø, 4W.		1Ø, 3W.	
	Cat. No.	Price	Cat. No.	Price	Cat. No.	Price
QO Bkr-70A, Max. Enclosure..	PI-QO	\$12.	PIN-QO	\$14.	PIN-QO	\$14.
Type FA—50A, Max. Encl..	PI-50-FA	39.	PIN-50-FA	48.	PIN-50-FA	48.
Type FA—60, 100A, Encl..	PI-100-FA	39.	PIN-100-FA	48.	PIN-100-FA	48.

† Use 1Ø, 3W enclosures for 3Ø-3W, 240 V, grounded BØ system. With PIN-QO, use breakers QO-215-H, QO-220-H and QO-230-H. For higher ratings, use Type FA enclosures and breakers.

SCHEDULE E1 DISCOUNT

CIRCUIT BREAKERS† •

Breaker Only (Price Enclosure from Table above) Type and Ampere Rating	Single Pole		Two Pole		Three Pole	
	Cat. No.	Price	Cat. No.	Price	Cat. No.	Price
QO (1P.—120/240 VAC) (2P.—120/240 VAC) (3P.—240 VAC)	—15A	QO115 \$ 3.30	QO215 \$ 7.70	QO315 \$26.30		
	—20A	QO120 \$ 3.30	QO220 7.70	QO320 26.30		
	—30A	QO130 8.30	QO230 7.70	QO330 26.30		
	—40A	QO140 8.30	QO240 7.70	QO340 26.30		
	—50A	QO150 3.30	QO250 7.70	QO350 26.30		
	—60A	.....	QO260 7.70	QO360 26.30		
	—70A	.....	QO270 15.60	.....	
Type FA (480 V. AC)	—15A	FAL-24015 26.00	FAL-24015 62.00	FAL-34015 79.00		
	—20A	FAL-24020 26.00	FAL-24020 62.00	FAL-34020 79.00		
	—30A	FAL-24030 26.00	FAL-24030 62.00	FAL-34030 79.00		
	—40A	FAL-24040 26.00	FAL-24040 62.00	FAL-34040 79.00		
	—50A	FAL-24050 26.00	FAL-24050 62.00	FAL-34050 79.00		
	—60A	FAL-24060 26.00	FAL-24060 62.00	FAL-34060 79.00		
	—70A	FAL-24070 31.00	FAL-24070 79.00	FAL-34070 94.00		
	—90A	FAL-24090 31.00	FAL-24090 79.00	FAL-34090 94.00		
	—100A	FAL-24100 31.00	FAL-24100 79.00	FAL-34100 94.00		

• Use 600 V. FA type breakers for 600 VAC service and price from digest page 46.

† Order a PI-100-TP Top Plate if 2 or 3 single pole.
FAL breakers are used in one enclosure.

SCHEDULE B DISCOUNT

FUSIBLE PLUG-IN UNITS

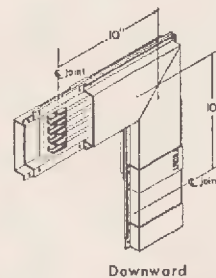
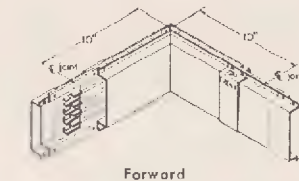
	3Ø, 3W.		3Ø, 4W.		1Ø, 3W	
	Cat. No.	Price	Cat. No.	Price	Cat. No.	Price
Fusible Non-Switching* 250V.—30A. —60A. 600V.—30A. —60A.	NSF-321	\$24.	NSF-421	\$28.	NSFN-321	\$24.
	NSF-322	39.	NSF-422	41.	NSFN-322	39.
	NSF-361	42.	NSF-461	44.	NSF-461	44.
	NSF-362	43.	NSF-462	45.	NSF-462	45.
Fusible Cover Operated 250V.—30A. —60A. 600V.—30A. —60A.	FC-321	50.	FCN-321	55.	FCN-221	50.
	FC-322	56.	FCN-322	58.	FCN-222	56.
	FC-361	53.	FCN-361	58.	.....	.....
	FC-362	59.	FCN-362	70.	.....	.....

* For non-fusible, non-switching plug-in unit use plug-in cable tap box.

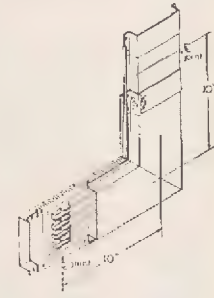
SCHEDULE E1 DISCOUNT

Square D 100-ampere aluminum plug-in duct is a flexible and economical indoor busway. Typical uses are (a) branch power feeders to panelboards or motors and (b) plug-in duct for small distributed loads.

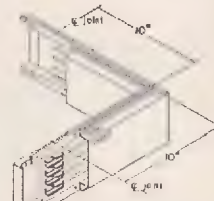
The electrical conductors are silver-plated round aluminum bars supported in a steel housing by molded insulators. All plug-in openings are usable and are polarized. Finish is light gray baked enamel. (ASA-49).



PI-QO



Upward



Rearward

Straight Lengths—Available only in lengths listed. One edgewise hanger is furnished with each 10 feet of duct. Normal mounting position is edgewise with neutral at the top.

Extra Hangers—Duct is U/L listed for 10-foot hanger spacing if mounted edgewise. For flatwise mounting (not U/L listed) order two flatwise hangers for each 10 feet of duct. Add \$1.00 each for extra edgewise hangers and all flatwise hangers.

Cable Tap Box—Available as end tap box (bolt-on) or center tap box (plug-in). The end tap box is rated at 100 amperes and the center tap box is available in 60 or 100 ampere ratings. End closure is not required with end tap box.

End Closure—Required at end of run when tap box is not used.

Outlet Cover—Required to cover opening when plug-in unit is relocated.

Elbows—Order by catalog number. Refer to drawings for proper orientation by top and front markings.

Tees—Order by catalog number; follow same orientation procedure as that required for elbows.

Floor Operator Attachment for PI-QO and PIN-QO enclosures order operator number PI-1-QO at \$23. each. For FA enclosures order operator number PI-1-FA at \$27 each.

FUSIBLE PLUG-IN UNITS

	3Ø, 3W		3Ø, 4W		1Ø, 3W	
	Cat. No.	Price	Cat. No.	Price	Cat. No.	Price
Fusible Floor-Operable 250 V.—30 A. —60 A. —100 A.	FA-321	\$ 78.	FAN-321	\$ 85.	FAN-221	\$ 73.
	FA-322	78.	FAN-322	81.	FAN-222	78.
	FA-323	116.	FAN-323	128.	FAN-223	116.
500 V.—30 A. —60 A. —100 A.	FA-361	78.	FAN-361	91.	.....	.....
	FA-362	88.	FAN-362	98.	.....	.....
	FA-363	120.	FAN-363	132.	.....	.....

SCHEDULE E1 DISCOUNT



I-LINE® BUSWAY

FEEDER DUCT AND PLUG-IN DUCT



TAKE ADVANTAGE OF THE TREMENDOUS INSTALLATION SAVINGS POSSIBLE WITH I-LINE!

I-LINE® FEEDER VS. WIRE AND CONDUIT

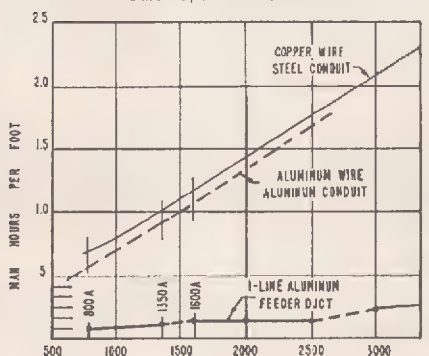
Use I-LINE feeder duct instead of wire and conduit to cut the total cost for exposed (accessible) work. Although material costs are higher, the installation time of I-LINE is much less than that of wire and conduit. The installation time for wire and conduit is shown in the chart. The labor units for wire and conduit are based upon data from ESTIMATIC CORPORATION, without job factors, using 100 foot wire pulls and taking parallel wire pulls into account. Hangers or fastenings or terminations are not included.

I-LINE® FEEDER VS. OTHER FEEDER DUCT

Compare the installation time of I-LINE vs. the installation time of other feeder duct. The labor units shown in the charts allow direct comparison. Neither of the charts include job factors, hangers, fittings, terminals or rigging. I-LINE installs faster, through simplified joint construction, lighter weight, compact size. The proof is given in the Labor Cost Survey by ESTIMATIC CORPORATION. Contact your local Square D field office for your copy.

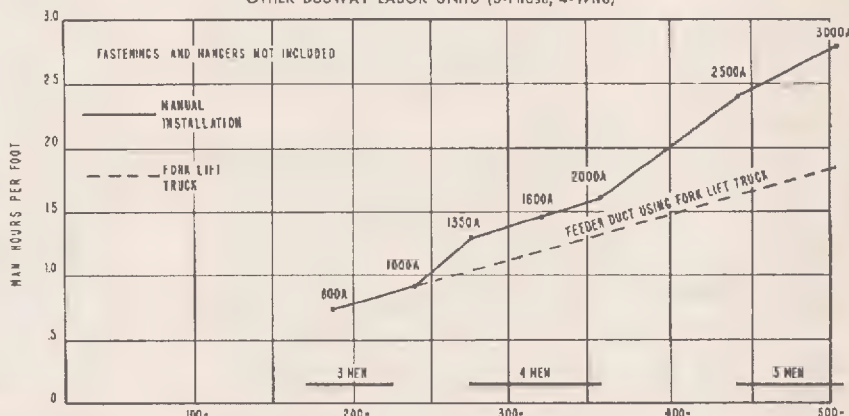
INSTALLATION TIME OF I-LINE VERSUS WIRE IN CONDUIT FOR EXPOSED WORK

No Hangers, Fastenings, or Terminations Included.
Based Upon 100 Ft. Runs



CURRENT RATING IN AMPERE - 3 PHASE-4 WIRE

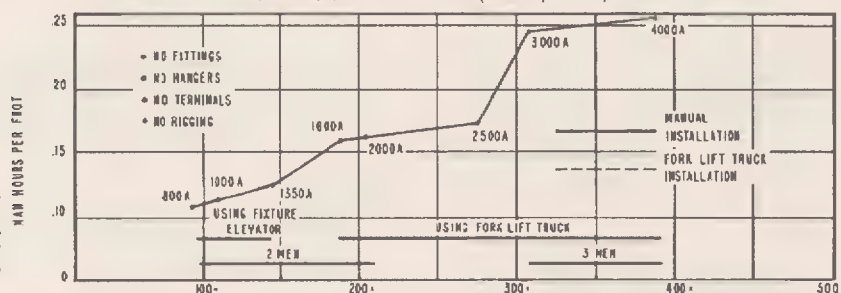
OTHER BUSWAY LABOR UNITS (3-Phase, 4-Wire)



BUSWAY WT. IN LBS./10 FT. SECTION (3 PH-4W)

FROM ELECTRICAL CONSTRUCTION COST MANUAL BY RALPH E. JOHNSON, COPYRIGHT 1961 MCGRAW HILL BOOK CO. USED BY PERMISSION

I-LINE BUSWAY LABOR UNITS (3-Phase, 4-Wire)



BUSWAY WT. IN LBS./10 FT. SECTION (3 PH-4W)

CHART BASED ON TEST OF 1350A AND 2500A 3 POLE DUCT, ESTIMATIC CORPORATION DENVER, COLO. SEPT. 25, 1960

EXAMPLE:

200 Feet of 2500 amp.
3 ϕ 4 W.

Other Duct @ 1.60 man
hrs./ft. 320.0 hrs.

I-LINE @ .169 man hrs./ft. 33.8 hrs.

Savings using I-LINE 286.2 hrs.

EXAMPLE:

300 Feet of 1350 amp.
3 ϕ 4 W.

Other Duct @ 1.25 man
hrs./ft. 375.0 hrs.

I-LINE @ .115 man hrs./ft. 34.5 hrs.

Savings using I-LINE 340.5 hrs.

I-LINE® PLUG-IN BUSWAY

Plug-in busway offers labor savings comparable to feeder duct, plus the versatility of plug-in switches or breakers. Installation costs will be affected by the number of operations involved in joint assembly and the physical size and weight of the busway. The first two of these factors are nearly identical for plug-in and feeder

busway rating for rating. Weight handling costs will be approximately that of the next higher feeder duct rating. I-LINE feeder and plug-in busway sections join at a standard joint in most ratings, allowing lengths of plug-in duct to be inserted in a feeder duct run with ease.



I-LINE® BUSWAY

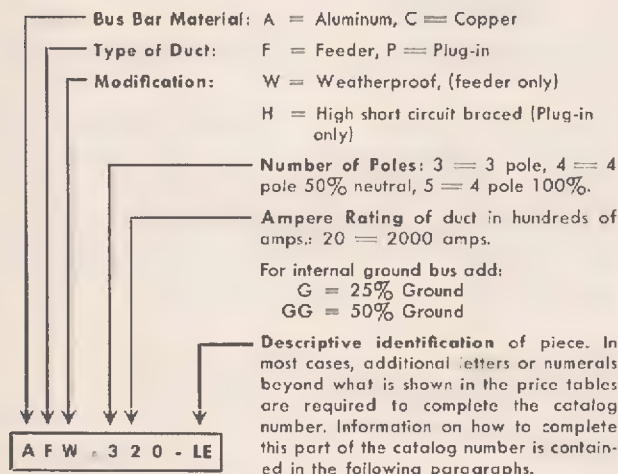
TOTALLY ENCLOSED • LOW IMPEDANCE

PRICING INSTRUCTIONS

PLEASE READ THESE INSTRUCTIONS BEFORE PRICING BUSWAY SYSTEMS

● CATALOG NUMBER SYSTEM

I-LINE busway catalog numbers are made up of 3 basic parts (two or three letters) — (three numerals) — (one or more letters or numerals). The meaning of these letters and numerals is diagrammed below.



● GENERAL PRICING INSTRUCTIONS

Prepare a layout sketch of the run showing all dimensions in feet and inches, all wall and floor locations and thicknesses and all fittings such as elbows, tees, crosses, flanged ends, end closures, cable tap boxes, expansion joints and reducers. Add all dimensions together and adjust the total to the higher whole foot. Multiply this total by the price per foot as determined by the type (plug-in or feeder) (aluminum or copper) (indoor or weatherproof), the ampere rating and the number of poles. To this add the labor only charges for each of the elbows, tees, crosses, flanged ends, expansion joints and reducers. To this add the price for each of the cable tap boxes, service heads, tap-off devices, transformer taps and end closures. Add for any bus extension or special features such as roof flanges, special lugs, ground bus. The sum of all these items is the price of the entire layout of duct. The price breakdown for each of the various components will be done at the factory. It is not normally necessary to obtain "Complete Device" prices for individual pieces of duct when entering an order.

● WEATHERPROOF DUCT PRICING (FEEDER DUCT ONLY)

Determine the overall footage and footage charge as described above for indoor duct. Add 20% to the indoor footage charge to cover weatherproof construction. Add charge for a vapor barrier if the duct passes through a building wall or roof from an interior to an exterior space. Insure that AFW and CFW prefix is specified as shown above. When ordering weatherproof feeder duct, a layout sketch must accompany the order. Sketch must show all dimensions, and must indicate whether the duct is in the flatwise, vertical or edgewise mounting positions. If duct passes through a roof, floor or wall be sure to indicate its location and thickness. Add the "labor only" price for fittings and special features just as done for indoor runs.

● STANDARD STRAIGHT LENGTHS

The basic component of a busway system is a straight section with a "bolt end" on one end and a "slot end" on the other. Plug-in duct is available in standard lengths of 6, 7, 8 and 10 feet. Feeder duct lengths are standard at 10 feet, but can be supplied from 30" to 120" in increments of 1" without special engineering. When ordering by catalog number, add suffix number to designate length. (e.g., 7 feet = AF-320-7, 73 inches = AF-320-73). Suffix numerals below 11 indicate length in feet, numerals over 10 indicate length in inches.

Joint connection parts are part of the duct length and are included in the footage charge.

● ELBOWS

The elbow "labor only" charge applies to all types of 90° elbows within a particular rating of duct. The charge does not include any duct footage

(i.e., A charge for the appropriate amount of duct footage would have to be added to the labor only charge to obtain a "complete device" charge). When ordering by catalog number, refer to page 100 and add the complete suffix to designate type of elbow required. (i.e., AP-304-LFO = front outside elbow, AF-310-LE = edgewise elbow). Standard dimensions are shown on page 100.

If elbow is other than 90°, double the labor only charge.

● INDOOR TAP BOXES

The Type PTB 225A through 600A cable tap box is a plug-in device. The Type PTB 800A through 1600 A cable tap box is a bolt-on device. The price is the total device price; no duct footage charge is required. If special lugs are required other than standard Square D lugs, add special lug charge from Additions section. If the tap box is to be used at the end of a run, order an end closure also for that end.

The Types CP, CF and AF cable tap boxes are integrally built into a short length of duct. The end cable tap box is assembled to one 18" leg of duct. The center cable tap box has an 18" leg of duct attached to two opposite sides. When ordering by catalog number, the complete suffix should read -ETBB for an End Tap Box with a "bolt end" leg (to join an existing slot end from some adjacent fitting) or -ETBS for an End Tap Box with slot end leg. Complete suffix for a Center Tap Box is -CTB. (e.g., AF-320-ETBS). The "labor only" charge from price tables does not include any duct footage. Figure duct footage to the centerline of End Tap Boxes (to figure footage to the centerline, add 12" from the face of the box for ratings 600A through 2000A; 18" for ratings above 2000A). The duct footage for legs and tap box must be added to the labor only charge if a complete device charge is required.

● TEE AND CROSS

The labor charge for tees and crosses shown in the Price Table applies to all types of 90° tee or cross fittings within a given rating. Dimensions and catalog number suffix of tee fittings will be found on page 101. Legs of flatwise crosses are the same as flatwise tees. Refer to factory for edgewise cross dimensions.

● EXPANSION FITTINGS

Expansion fitting labor only charge does not include duct footage. The expansion fitting is built into a 5 foot straight length and cannot be ordered separately. Limit of expansion or contraction is $\pm 1\frac{1}{2}$ "

● JOINT CHANNELS

Joint tie channels are shipped with each piece of busway. Adapter tie channels are required to connect feeder duct to plug-in duct of like current rating and number of poles. One set of adapter tie channels will be furnished at no charge for each feeder to plug-in joint connection. Order separately from table below.

To Connect	Example	Use One
3 Pole, or 3 Pole with 25% ground bus	AF-320 to AP-320	AJC-3A
4 Pole, or 3 Pole with 50% ground bus	CF-510 to CP-510	AJC-3AB
4 Pole with 25% or 50% ground bus	CF-425G to CP-425G	AJC-3ABC

● HANGERS

All I-LINE busway is U/L listed for 10 foot hanger spacing in the flatwise (normal) mounting position and in the vertical mounting position. I-LINE busway is U/L listed for 10 foot hanger spacing in the edgewise mounting position except as follows:

Type AP 225A and CP 225A (Mounted edgewise).
5 foot maximum spacing.

Type AP 400A and CP 400A, 600A (Mounted edgewise).
requires Cat. #ACP-2-SC for 10 foot spacing.

Type AP 600A (Mounted edgewise).
requires Cat. #ACP-3-SC for 10 foot spacing.

Support channels Cat. #ACP-2-SC and ACP-3-SC will be furnished at no charge if requested at time of order entry.

Order hangers separately (refer to catalog selection sheets for catalog number) unless order is accompanied by sketch.



I-LINE® BUSWAY

TOTALLY ENCLOSED • COMPACT SIZE

● FLANGED ENDS

A flanged end consists of flared bus extending beyond the duct housing, and a collar attached at the end of the housing. It is used for termination of the run at a switchboard, enclosed transformer, or similar device. The labor only charge includes forming and drilling of the flared bus and that portion of open bus (7") extending beyond the collar. It does not include duct footage up to the collar.

● BUS EXTENSION

Bus extension is used in conjunction with flanged ends or transformer tap connections where the standard length of exposed bus is insufficient to make the required connections. The price includes material and the required forming for extension to all phases. Determine the length of bus extension and price the next higher whole foot.

● UNFUSED REDUCER

Unfused reducers are used to reduce from a higher amperage busway to a lower amperage. Labor only prices are listed in table and do not include duct footage. Reducers are built into a straight length of duct. Price each rating of duct to the centerline of reducer and include the labor only price of the higher rating. NOTE: Local inspection rulings or National Electric Code Article 364 govern the use of unfused reducers.

● END CLOSURES

End closures are required only where a "bolt end" or "slot end" of a standard duct length or fitting is left at the end of a run. End closures for busways Type AP 225-600A, and CP 225-600A, extend 4 inches beyond the end of the duct run. All other end closures extend 5 inches beyond the end of the duct run.

SERVICE ENTRANCE BUSWAY

(ARRANGEMENTS REQUIRED TO MATCH SWITCHBOARD DELIVERY)

Dimensions other than those shown below require 4 weeks more than published delivery schedules.

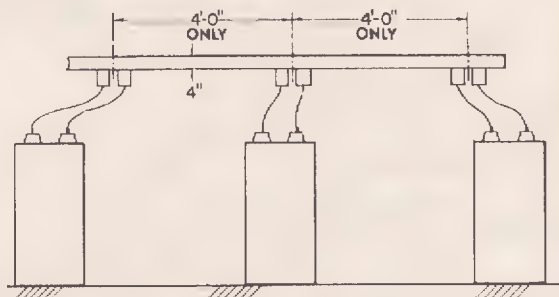
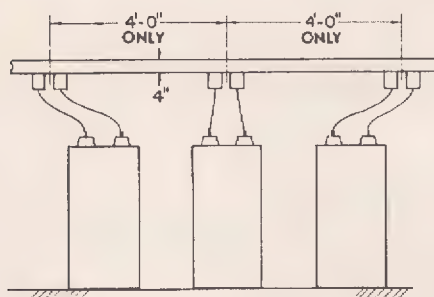
● TRANSFORMER TAPS

Transformer taps are used to make cable connection to unenclosed transformers. Two arrangements are built as shown. Arrangement 1, when built as 4 pole duct, is always built with full neutral construction.

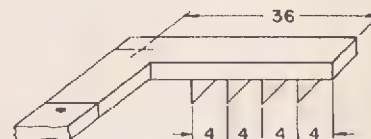
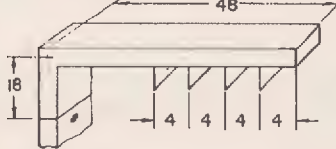
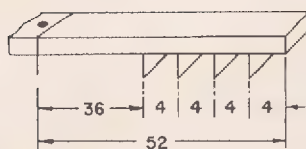
The price does not include duct footage. Figure duct footage price to

centerline of last group of taps. Use standard dimensions shown. Price of taps includes lugs; if lugs other than standard Square D manufacture are required, add charges from Additions section. The transformer tap is 7 inches long. Note that taps need not be located directly above transformers for cable connections.

ARRANGEMENT 1
(3-1 ϕ Transformers)



ARRANGEMENT 2
(1-3 ϕ Transformer)

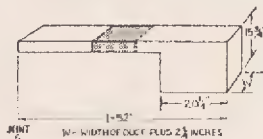


LEFT OR RIGHT HAND

● WEATHERPROOF SERVICE HEADS

Service heads are factory assembled and include Square D standard lugs. Price duct footage to end of duct run including dimension of service head. Add cable tap box charges.

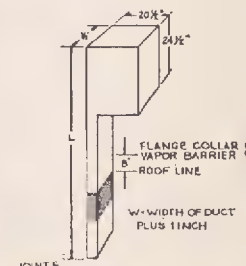
FLATWISE SERVICE HEAD



STOCK SERVICE HEAD
In exact dimensions shown above and in Aluminum only 600 amp. through 2000 amp.

VERTICAL SERVICE HEAD

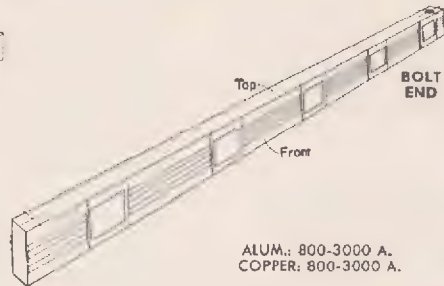
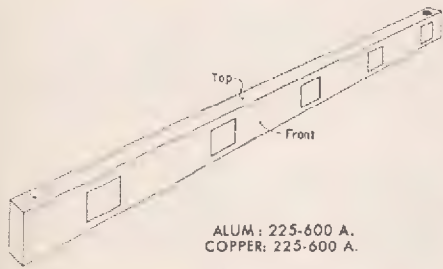
L dimension can vary in 4" increments from 44" to 112". Specify roof thickness and location. Vapor barrier will be located 8" above top of roof.



I-LINE® BUSWAY

DIMENSIONS FOR STRAIGHT LENGTHS & ELBOWS

STRAIGHT LENGTHS — PLUG-IN DUCT

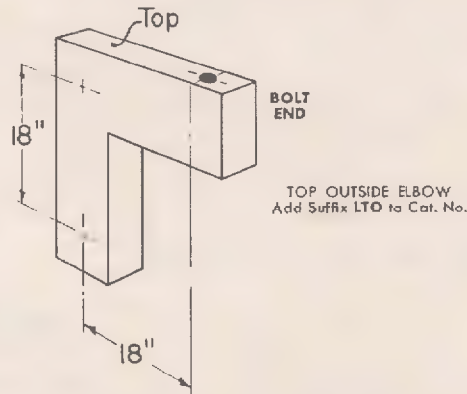
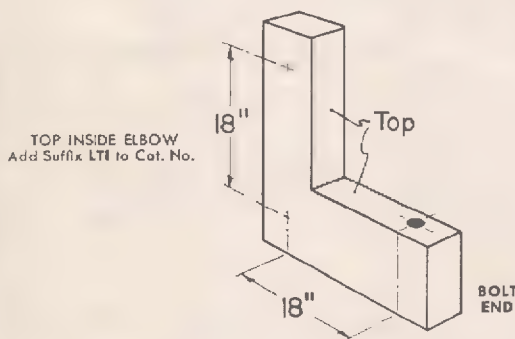
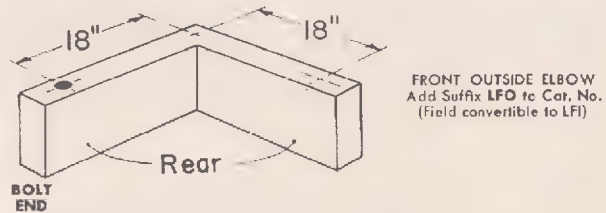
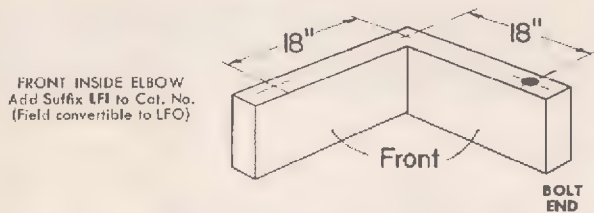


WITH BOLT TOWARD RIGHT, SIDE VIEWED IS DEFINED AS "FRONT"

STRAIGHT LENGTHS — FEEDER DUCT



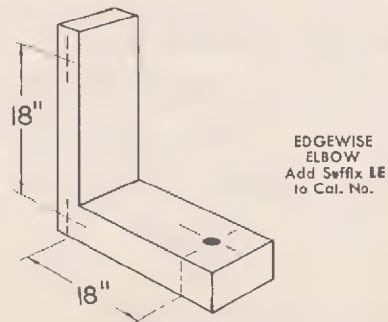
ELBOWS — PLUG-IN DUCT-ALUM., TYPE AP:225-600 A.; COPPER, TYPE CP:225-600 A.



ELBOWS — PLUG-IN DUCT-ALUM., TYPE AP:800-3000 A.; COPPER, TYPE CP:800-3000 A. FEEDER DUCT-ALUM., TYPE AF:600-4000 A.; COPPER, TYPE CF:800-5000 A.



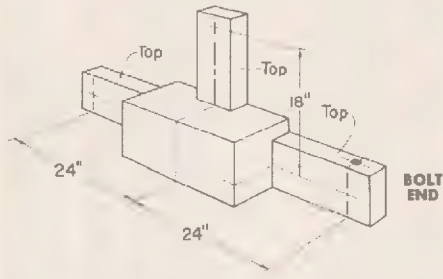
FLATWISE ELBOW		
Alum.	Copper	A
600-1350	800-1600	18
1600-4000	2000-5000	36



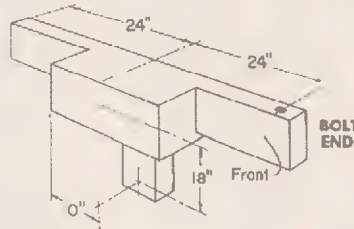
I-LINE® BUSWAY

DIMENSIONS FOR TEE FITTINGS

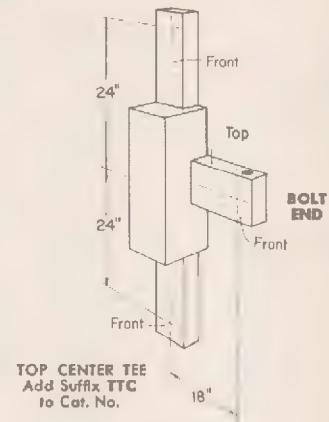
PLUG-IN DUCT-ALUM., TYPE AP:225-600 A.; COPPER, TYPE CP:225-600 A.



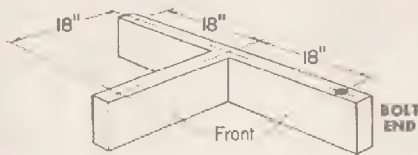
TOP INSIDE TEE
Add Suffix **TTI**
to Cat. No.



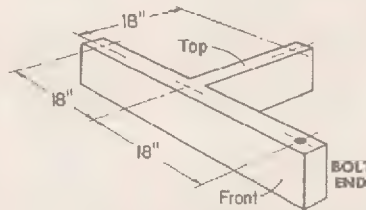
TOP OUTSIDE TEE
Add Suffix **TTO**
to Cat. No.



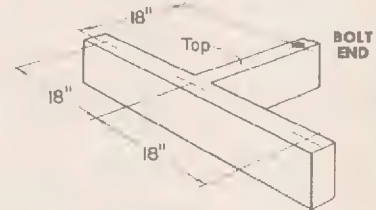
TOP CENTER TEE
Add Suffix **TTC**
to Cat. No.



FRONT INSIDE TEE
Add Suffix **TFI**
to Cat. No.
(Field convertible to TFO or TFC)

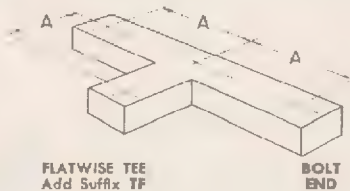


FRONT OUTSIDE TEE
Add Suffix **TFO**
to Cat. No.
(Field convertible to TFI or TFC)



FRONT CENTER TEE
Add Suffix **TFC**
to Cat. No.
(Field convertible to TFI or TFO)

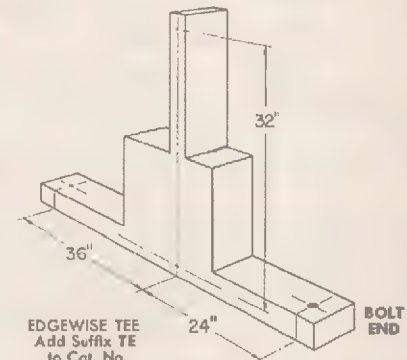
PLUG-IN DUCT-ALUM., TYPE AP:800-3000 A.; COPPER, TYPE CP:800-3000 A.
FEEDER DUCT-ALUM., TYPE AF:600-4000 A.; COPPER, TYPE CF:800-5000 A.



FLATWISE TEE
Add Suffix **TF**
to Cat. No.

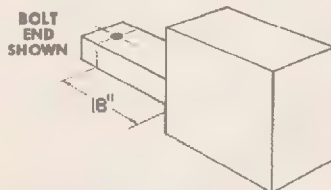
FLATWISE TEE

Rating		Dimension A
Aluminum	Copper	
600-1350	800-1600	18
1600-4000	2000-5000	36



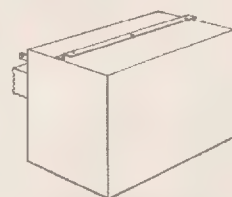
EDGEWISE TEE
Add Suffix **TE**
to Cat. No.

CABLE TAP BOXES



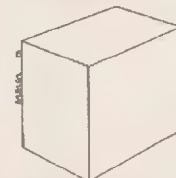
END TAP BOX
Alum. 600-4000 Amp.
Copper 800-5000 Amp.

Add Suffix
-ETBS — with Slot End
-ETBB — with Bolt End



BOLT-ON TAP BOX
800-1600 Amp.

225-400-600 A. Ratings
Plug Into Any Rating of
Plug-in Duct



PLUG-IN TAP BOX
225-600 Amp.



I-LINE® BUSWAY

TOTALLY ENCLOSED • LIGHT WEIGHT

SELECT PROPER PREFIX — REFER TO PAGE 98

Number of Poles▲ and Voltage	Amp. Rating	BUSWAY FOOTAGE				25% GROUND BUS		50% GROUND BUS		END CLOSURES		BUS EXTENSION	
		ALUMINUM		COPPER		Al.	Cu.	Al.	Cu.	Al.	Cu.	Al.	Cu.
		Indoor Cat. No. Feeder ↓	Indoor Cat. No. Plug-in ↓	Indoor Cat. No. Feeder ↓	Indoor Cat. No. Plug-in ↓	Price Per Foot Adder	Price Per Foot Adder	Price Per Foot Adder	Price Per Foot Adder	Price Each	Price Each	Price Per Foot	Price Per Foot
3 Pole 600 V.	225	AF	AP-302	CF	CP-302	\$ 14.	\$ 18.	\$ 3.	\$ 4.	\$ 4.	\$ 6.	\$ 37.	\$ 17.
	400		AP-304		CP-304	19.	27.	4.	6.	37.	37.	23.	33.
	600		AP-306		CP-306	24.	35.	6.	7.	37.	37.	31.	40.
	600		-306			29.		6.		37.		31.	
	800	AF	AP-308	CF	CP-308	33.	51.	7.	8.	37.	37.	38.	54.
	1000	AF	AP-310	CF	CP-310	38.	54.	7.	8.	37.	37.	51.	68.
	1350	AF	AP-313	CF	CP-313	58.	81.	8.	11.	37.	37.	86.	117.
	1600	AF	AP-316	CF	CP-316	72.	96.	10.	14.	49.	37.	98.	137.
	2000	AF	AP-320	CF	CP-320	85.	121.	12.	17.	49.	49.	124.	171.
	2500	AF	AP-325	CF	CP-325	104.	152.	16.	23.	49.	49.	164.	229.
	3000	AF	AP-330	CF	CP-330	119.	181.	20.	31.	62.	49.	264.	288.
	4000	AF	AP-340	CF	CP-340	162.	235.	29.	38.	62.	62.	379.	525.
	5000		● -340	CF	-350	205.	282.	36.	48.	96.	62.	549.	785.
3φ, 4 W. 277/480 V. 50% Neutral	225	AF	AP-402	CF	CP-402	17.	22.	3.	4.	37.	37.	29.	32.
	400		AP-404		CP-404	24.	37.	4.	6.	37.	37.	36.	49.
	600		AP-406		CP-406	31.	41.	6.	7.	37.	37.	43.	58.
	600		-406			33.		6.		37.		43.	
	800	AF	AP-408	CF	CP-408	38.	59.	7.	8.	37.	37.	56.	78.
	1000	AF	AP-410	CF	CP-410	49.	65.	7.	8.	37.	37.	67.	91.
	1350	AF	AP-413	CF	CP-413	70.	95.	8.	11.	37.	37.	91.	125.
	1600	AF	AP-416	CF	CP-416	82.	113.	10.	14.	49.	37.	112.	156.
	2000	AF	AP-420	CF	CP-420	104.	141.	12.	17.	49.	49.	133.	182.
	2500	AF	AP-425	CF	CP-425	126.	174.	16.	23.	49.	49.	179.	247.
	3000	AF	AP-430	CF	CP-430	148.	210.	20.	31.	62.	49.	285.	320.
	4000	AF	AP-440	CF	CP-440	198.	278.	29.	38.	62.	62.	406.	564.
	5000		● -440	CF	-450	253.	337.	36.	48.	96.	62.	588.	847.
3φ, 4 W. 277/480 V. 100% Neutral	225	AF	AP-502	CF	CP-502	18.	27.	3.	4.	37.	37.	33.	42.
	400		AP-504		CP-504	27.	40.	4.	6.	37.	37.	45.	64.
	600		AP-506		CP-506	36.	51.	6.	7.	37.	37.	58.	81.
	600		-506			39.		6.		37.		58.	
	800	AF	AP-508	CF	CP-508	45.	65.	7.	8.	37.	37.	61.	88.
	1000	AF	AP-510	CF	CP-510	54.	81.	7.	8.	37.	37.	72.	96.
	1350	AF	AP-513	CF	CP-513	78.	111.	8.	11.	37.	37.	96.	136.
	1600	AF	AP-516	CF	CP-516	95.	131.	10.	14.	49.	37.	124.	171.
	2000	AF	AP-520	CF	CP-520	116.	161.	12.	17.	49.	49.	142.	198.
	2500	AF	AP-525	CF	CP-525	145.	199.	16.	23.	49.	49.	192.	268.
	3000	AF	AP-530	CF	CP-530	169.	243.	20.	31.	62.	49.	306.	336.
	4000	AF	AP-540	CF	CP-540	229.	321.	29.	38.	62.	62.	435.	603.
	5000		● -540	CF	-550	288.	386.	36.	48.	96.	62.	625.	907.

▲ Consult factory for price of 2 pole busway.

★ To price weatherproof feeder duct add 20% to indoor price per foot. The fitting labor charge is the same for indoor and weatherproof feeder duct.

● 5000 A. aluminum will be supplied as two parallel runs.

Reduced Capacity Cable Tap Boxes: If reduced capacity cable tap boxes are required; i.e., 1000 amp. tap box on 4000 amp. duct, price from table. Tap boxes are factory assembled and include Square D standard lugs. If special lugs are required add special lug charge. Prices do not include duct footage.

Vertical EZ Stack Taps: Price from table includes connection box and connectors for adjacent-mounted Vertical EZ Stack.

Tap Off Device Mounted on Duct: To price QMB fusible switches or molded case circuit breakers mounted on feeder duct, add connection charge and device charge from tables. The connection charge includes neutral lugs for 1φ, 3W, and 3φ, 4W systems, but does not include duct footage. Unit mounting height will be determined by the number of devices and spaces priced but cannot exceed 24 inches. Refer to page 79 and 83 for individual device heights. If additional height is required, price as panelboard mounted on duct. Overcurrent devices through 225 amp. are plug-in; above 225 amp. are bolt-on.

ML or QMB Panelboard Mounted on Duct — Price the complete panelboard (factory assembled type only) from the Digest or latest SP Green Sheets. Add both panelboard provisions charge and duct connection charge from the tables at right.

SHORT-CIRCUIT RATINGS — AMPERES

Nameplate Rating Amperes		NEMA Standard Ratings		FEEDER DUCT Type AF & CF		PLUG-IN DUCT				PRICING To obtain price of APH & CPH busway, price as AP or CP and add as follows:
						Type AP & CP		Type APH & CPH		
Aluminum	Copper	Sym.	Asym.	Sym.	Asym.	Sym.	Asym.	Sym.	Asym.	
225	225	14,000	15,300			20,000	23,000			Add 10% to total footage price.
400	400-600	22,000	25,300			22,000	25,000	45,000	50,000	
600		22,000	25,300	150,000	110,000	22,000	25,000	45,000	50,000	Add 10% to footage price of plug- in duct straight lengths only.
800	800-1000	22,000	25,300	150,000	110,000	50,000	55,000	85,000	95,000	
1000		22,000	25,300	150,000	110,000	50,000	55,000	90,000	100,000	Add 5% to footage price of plug- in duct straight lengths only.
1350	1350-1600	42,000	50,000	150,000	110,000	50,000	55,000	90,000	100,000	
1600		42,000	50,000	150,000	165,000	100,000	110,000	135,000	150,000	
	2000	65,000	75,000	150,000	165,000	100,000	110,000	135,000	150,000	
2000-2500	2500-3000	65,000	75,000	150,000	165,000	100,000	110,000	135,000	150,000	
3000		65,000	75,000	200,000	225,000	135,000	150,000	175,000	200,000	
4000	4000	85,000	100,000	200,000	225,000					
	5000	100,000		200,000	225,000					



I-LINE® BUSWAY

TOTALLY ENCLOSED • LOW IMPEDANCE

FITTINGS

Number of Poles and Voltage	Ampere Rating	FLANGED END *	ELBOW Right Angle	TAP BOX Service Head	TEE	CROSS	UNFUSED REDUCER	EXPANSION FTG.	WALL FLANGE	SPRING HANGER	TRANSFORMER TAPS			XFMR THROAT CONN. †
		Price Labor Only	Price Labor Only	Price Labor Only	Price Labor Only	Price Labor Only	Price Labor Only	Price Labor Only	Price Each	Price Each	Price, Labor Only*			Price Labor Only
		One 3φ XFMR Y or Δ	Three 1φ XFMR Δ	Three 1φ XFMR Y										
3 Pole 600 V.	225	\$ 80.	\$124.	\$98. ‡	\$151.	\$176.		\$202.	\$ 42.	\$ 19.				
	400	92.	124.	123. ‡	151.	176.	\$ 78.	227.	42.	19.				
	600	119.	124.	135. ‡	151.	176.	86.	247.	42.	19.				
	600	119.	124.	160.	151.	176.	86.	247.	42.	19.	\$144.	\$346.		\$612.
	800	128.	124.	212.	151.	176.	113.	323.	42.	19.	155.	372.		625.
	1000	145.	124.	223.	151.	176.	127.	345.	42.	19.	180.	425.		645.
	1350	170.	166.	244.	209.	247.	276.	359.	42.	19.	211.	485.		685.
	1600	186.	166.	265.	209.	247.	306.	485.	42.	19.	233.	586.		702.
	2000	223.	166.	297.	209.	247.	368.	527.	42.	19.	270.	657.		744.
	2500	265.	166.	329.	209.	247.	510.	567.	42.	19.	323.	761.		836.
3φ, 4W. 277/480 V. 50% Neutral	225	\$ 83.	\$151.	\$111. ‡	\$176.	\$206.		\$239.	\$ 42.	\$ 19.				
	400	95.	151.	135. ‡	176.	206.	108.	259.	42.	19.				
	600	123.	151.	147. ‡	176.	206.	118.	295.	42.	19.				
	600	123.	151.	172.	176.	206.	118.	295.	42.	19.	147.	375.	\$346.	642.
	800	133.	151.	223.	176.	206.	145.	356.	42.	19.	158.	402.	372.	677.
	1000	151.	151.	233.	176.	206.	171.	405.	42.	19.	188.	463.	425.	690.
	1350	174.	209.	265.	247.	289.	323.	456.	42.	19.	217.	535.	485.	720.
	1600	199.	209.	276.	247.	289.	356.	591.	42.	19.	246.	623.	586.	746.
	2000	231.	209.	318.	247.	289.	465.	632.	42.	19.	280.	709.	657.	786.
	2500	279.	209.	350.	247.	289.	591.	672.	42.	19.	338.	831.	761.	880.
3φ, 4W. 277/480 V. 100% Neutral	225	\$ 83.	\$151.	\$123. ‡	\$176.	\$206.		\$239.	\$ 42.	\$ 19.				
	400	95.	151.	147. ‡	176.	206.	108.	259.	42.	19.				
	600	123.	151.	160. ‡	176.	206.	118.	295.	42.	19.				
	600	123.	151.	184.	176.	206.	118.	295.	42.	19.	153.	375.	346.	677.
	800	136.	151.	233.	176.	206.	145.	356.	42.	19.	162.	402.	372.	684.
	1000	160.	151.	244.	176.	206.	171.	405.	42.	19.	195.	463.	425.	708.
	1350	182.	209.	276.	247.	289.	373.	535.	42.	19.	224.	535.	485.	738.
	1600	211.	209.	307.	247.	289.	405.	649.	42.	19.	258.	623.	586.	784.
	2000	243.	209.	339.	247.	289.	544.	689.	42.	19.	292.	709.	657.	831.
	2500	295.	209.	382.	247.	289.	672.	745.	42.	19.	353.	831.	761.	930.
3φ, 4W. 277/480 V. 100% Neutral	3000	350.	209.	413.	247.	289.	808.	979.	61.	24.	417.	972.	886.	1030.
	4000	435.	247.	509.	289.	332.	1053.	1126.	61.	24.	491.	1127.	1018.	1348.
	5000	469.	247.	549.	289.	332.	1105.	1068.	61.	24.	553.	1276.	1179.	1803.

*For Square D standard lugs on flanged end, add \$5. per lug. For lugs other than Square D manufacture, add charge from "Additions" section.

†Price includes standard Square D lugs. See page 99 for standard dimensions.

•Vertical spring hanger for riser installation. Use is optional.

‡Price includes hushed rigid and flexible connections to L.V. terminals. Provide transformer detail drawings with order.

▲For elbows other than 90 degrees, double the labor only charge.

•Price is for complete device. These tap boxes are plug-in devices and require no duct footage charge. When plug-in tap box is used at end of a run, order an end closure also. For grounding provisions to match internal ground bus add \$12.

ADDITIONS

FEEDER DUCT TAP OFF DEVICES

	Price, Labor Only			
	1φ 2W.	1φ 3W.	3φ 3W.	3φ 4W.
Reduced Capacity Tap Box				
400 A.	\$160.	\$199.	\$199.	\$239.
600 A.	170.	209.	209.	247.
800 A.	179.	218.	218.	262.
1000 A.	192.	231.	231.	278.
E-Z Stack Tap-Off 600 A.		209.		247.
Tap-Off for Over-current Device				
400 A.		133.	133.	172.
800 A.		212.	212.	293.
1000 A.		265.	265.	350.

OVERCURRENT DEVICE (Add Tap Off Charge from Table at Left)

Devices	Rating (Amp.)	240 V. AC		480 V. AC		600 V. AC		Space Only
		2P	3P	2P	3P	2P	3P	
QMB Fusible Switch	100	\$ 83.	\$106.	\$ 83.	\$106.	\$ 83.	\$106.	\$ 46.
	200	138.	192.	186.	246.	186.	246.	57.
	400	302.	438.	412.	558.	412.	558.	86.
	600	470.	617.	536.	677.	536.	677.	86.
Circuit Breaker	FA 15-60	92.	107.	120.	137.	130.	150.	37.
	FA 70-100	113.	130.	137.	152.	149.	170.	45.
	KA 125-225	265.	313.	265.	313.	265.	313.	54.
	LA 250-400	401.	498.	401.	498.	401.	498.	85.
	MA 500-600	678.	875.	678.	875.	678.	875.	85.
	MA 700-800	882.	1141.	882.	1141.	882.	1141.	85.
	MA 900-1000	1206.	1445.	1206.	1445.	1206.	1445.	85.

MISCELLANEOUS ADDITIONS

Internal Vapor Barrier (required when duct passes through exterior wall or roof) . . . \$ 92.

Roof Flange (weatherproof) . . . 307.

Includes: Internal Vapor Barrier and Flange Collar . . . 92.

Drip Hood Attached to Duct . . . 123.

Roof Collar (attaches to roof) . . . 92.

Lugs other than Square D manufacture . . . Each

(Applies to Transformer Taps, Tap Boxes, . . . 500 MCM \$ 12.

Service Heads, etc., when non-standard . . . 750 MCM 18.

lugs are required) . . . 1000 MCM 21.

Fire Barrier . . . No Charge

Sway Brace Collar (Plug-In Duct) HP-1-SBC . . . \$ 1.



SCHEDULE E2 DISCOUNT

PAGE 103

I-LINE® BUSWAY

BOLT-ON UNITS AND CUBICLES

ADAPTER CUBICLES

SCHEDULE E2 DISCOUNT

Rating Amps.	FUSIBLE SWITCH								CIRCUIT BREAKER			
	240 V. AC 3P-3 Fuse		120/208 V. AC 4P-3 Fuse		600 V. AC 3P-3 Fuse		277/480 V. AC 4P-3 Fuse		600 V. AC 3 Pole		277/480 V. AC 3φ-4 Wire	
	Catalog Number	Labor and Switch	Catalog Number	Labor and Switch	Catalog Number	Labor and Switch	Catalog Number	Labor and Switch	Catalog Number	Labor and Breaker	Catalog Number	Labor and Breaker
200	PQ-3220-BB	\$ 670.	PQ-4220-BB	\$ 714.	PQ-3620-BB	\$ 714.	PQ-4620-BB	\$ 759.	PKA-36225-BB	\$ 929.	PKA-36225-N-BB	\$ 966.
400	PQ-3240-BB	770.	PQ-4240-BB	850.	PQ-3640-BB	860.	PQ-4640-BB	938.	PLA-36400-BB	1097.	PLA-36400-N-BB	1149.
600	PQ-3260-BB	912.	PQ-4260-BB	999.	PQ-3660-BB	1010.	PQ-4660-BB	1103.	PMA-36600-BB	1629.	PMA-36600-N-BB	1672.
800	PQ-3280-BB	1254.	PQ-4280-BB	1355.	PQ-3680-BB	1330.	PQ-4680-BB	1446.	PMA-36800-BB	1854.	PMA-36800-N-BB	1913.
1000	PQ-32100-BB	1523.	PQ-42100-BB	1692.	PQ-36100-BB	1625.	PQ-46100-BB	1812.	PMA-361000-BB	2148.	PMA-361000-N-BB	2208.

Adapter Cubicles are used to join two sections of unlike ratings of busway in accordance with the National Electrical Code Ruling, Article 364.

Prices shown are for switch or breaker and labor only. duct footage price must be added to obtain complete device price.

When ordering by catalog number add suffix AP, CP, AF or CF for type of busway and suffix LR or RL for left-to-right or right-to-left feed (i.e. PQ-3260-BB-AP-RL)

BOLT-ON TEE (Use with Series 3 plug-in busway ONLY.)

Bolt-on tees attach at any plug-in opening in Series 3 I-LINE plug-in busway 800 ampere through 3000 ampere. If used within five feet of end of plug-in duct run consult factory for use of special end closure.

SCHEDULE E2 DISCOUNT

Ampere Rating (Tee-Leg)		3 POLE		4 POLE 100%N	
Aluminum	Copper	Catalog Number	Price Each*	Catalog Number	Price Each*
400	400-600	PTT-3-3W	\$204.	PTT-3-4W	\$253.
600		PTT-4-3W	204.	PTT-4-4W	253.
800	800-1000	PTT-5-3W	232.	PTT-5-4W	298.
1000	1350	PTT-7-3W	332.	PTT-7-4W	414.
1350	1600	PTT-9-3W	353.	PTT-9-4W	444.

For grounding provisions to match internal ground bus add \$12.

*Device price includes 15 inches of busway.

Use with Series 3 plug-in busway only. Device will not fit Series 1 or 2 busway.



BOLT-ON Tee

BOLT-ON TAP BOX (Use with Series 3 plug-in busway ONLY.)

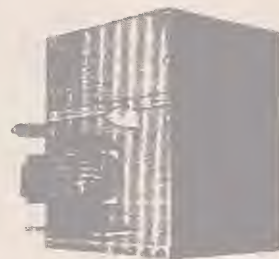
Bolt-on tap boxes attach at any plug-in opening in Series 3 I-LINE plug-in busway 800 ampere through 3000 ampere. If used within five feet of end of plug-in duct run consult factory for use of special end closure.

SCHEDULE E2 DISCOUNT

Ampere Rating	3 POLE		4 POLE 50%N		4 POLE 100%N	
	Cat. No.	Price Each	Cat. No.	Price Each	Cat. No.	Price Each
800	PTB-308	\$212.	PTB-408	\$223.	PTB-508	\$233.
1000	PTB-310	223.	PTB-410	233.	PTB-510	244.
1350	PTB-313	244.	PTB-413	265.	PTB-513	276.
1600	PTB-316	265.	PTB-416	276.	PTB-516	307.

For grounding provisions to match internal ground bus add \$12.

Use with Series 3 plug-in busway only. Device will not fit Series 1 or 2 busway.



BOLT-ON Tap Box

BOLT-ON UNITS — FLOOR-OPERABLE (Use with Series 3 plug-in busway ONLY.)

Bolt-on units attach at any plug-in opening in Series 3 I-LINE plug-in busway 800 ampere through 3000 ampere. If used within five feet of end of plug-in duct run consult factory for use of special end closure.

SCHEDULE E1 DISCOUNT

Rating Amps.	FUSIBLE SWITCH				CIRCUIT BREAKER							
	600 V. AC 3P-3 Fuse		277/480 V. AC 4P-3 Fuse		Type of Bkr	Bkr. Frame Amps.	Trip Rating Amps.	600 V. AC-3 Pole		277/480 V. AC-3φ4W		Price
	Catalog Number	Price	Catalog Number	Price				Catalog Number	Price	Catalog Number	Price	
800	PTQ-3680	\$1000.	PTQ-4680	\$1260.	MA	1000 (500 V.)	500	PTMA-36500	\$1184.	PTMA-36500-N	\$1239.	
							600	PTMA-36600	1184.	PTMA-36600-N	1239.	
							700	PTMA-36700	1433.	PTMA-36700-N	1488.	
							800	PTMA-36800	1433.	PTMA-36800-N	1488.	
							900	PTMA-36900	1707.	PTMA-36900-N	1762.	
							1000	PTMA-36100	1707.	PTMA-36100-N	1762.	

For grounding provisions to match internal ground bus add \$12.

Add Suffix "LB" to Catalog Number of circuit breaker bolt-on units when units are to be supplied as lug to bus main breakers.

Use with Series 3 plug-in busway only. Units will not fit Series 1 or 2 busway.



BOLT-ON Unit





I-LINE® BUSWAY

I-LINE BUSWAY PLUG-IN UNITS ONLY
REFER TO PAGE 108 FOR TYPES SD AND APD UNITS

**PLUG-IN UNITS
FUSIBLE**

TYPE PQ — FLOOR-OPERABLE — QUICK-MAKE, QUICK-BREAK

Rating Amps.	240 V. AC — 250 V. DC				120/208 V. AC		600 V. AC				277/480 V. AC	
	*2P-2 Fuse		3P-3 Fuse		4P-3 Fuse		*2P-2 Fuse		3P-3 Fuse		4P-3 Fuse	
	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price
30	PQ-2203	\$ 56.	PQ-3203	\$ 70.	PQ-4203	\$ 83.	PQ-2603	\$ 58.	PQ-3603	\$ 75.	PQ-4603	\$ 87.
60	PQ-2206	63.	PQ-3206	75.	PQ-4206	87.	PQ-2606	68.	PQ-3606	81.	PQ-4606	92.
100	PQ-2210	95.	PQ-3210	112.	PQ-4210	124.	PQ-2610	100.	PQ-3610	116.	PQ-4610	134.
200	PQ-2220	167.	PQ-3220	195.	PQ-4220	218.	PQ-2620	184.	PQ-3620	204.	PQ-4620	229.
400	PQ-2240	347.	PQ-3240	481.	PQ-4240	518.	PQ-2640	367.	PQ-3640	481.	PQ-4640	518.
600	PQ-2260	602.	PQ-3260	668.	PQ-4260	730.	PQ-2660	639.	PQ-3660	668.	PQ-4660	730.
800							PQ-2680	964.	PQ-3680	1090.	PQ-4680	1250.

TYPE PS — NON-FLOOR-OPERABLE

Rating Amps.	240 V. AC 250 V. DC				120/208 V. AC		600 V. AC				277/480 V. AC	
	*2P-2 Fuse		3P-3 Fuse		4P-3 Fuse		*2P-2 Fuse		3P-3 Fuse		4P-3 Fuse	
	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price
30	PS-2203	\$ 46.	PS-3203	\$ 53.	PS-4203	\$ 66.	PS-2603	\$ 48.	PS-3603	\$ 56.	PS-4603	\$ 69.
60	PS-2206	48.	PS-3206	57.	PS-4206	66.	PS-2606	52.	PS-3606	59.	PS-4606	73.
100	PS-2210	66.	PS-3210	74.	PS-4210	86.	PS-2610	68.	PS-3610	84.	PS-4610	96.

*Two pole units are supplied with AΦ and CΦ connections. If A-B or B-C connections are required, order 3 pole units.

Fusible Switch Plug-in Units can be plugged in at any opening of aluminum or copper plug-in duct. Plug-in units with 600 A. switches plug into any 2 adjacent openings spaced 24" apart. Units rated 400 A. require space of two openings. Add suffix "LB" to Catalog Number of plug-in units with switch ratings of 400 A., and 600 A. when units are to be supplied as lug to bus main switches; e.g., PQ-3640-LB.

For Grounding Provisions to match internal ground bus add \$12. Add "G" to catalog number; e.g., PQ-3640-G.

Class J Fuses Add suffix "J" to catalog number (600 V. and 277/480 V. only) for Class J fuse provisions. For 2, 3 or 4 pole units, 400 amp., add \$6. price per unit. For 2 pole, 600 amp. unit, add \$37. for 3 or 4 poles, 600 amp. unit, add \$55.

Unfused Units — Use price of 250 V. fusible switch units for either 250 V. or 600 V. application.

**PLUG-IN UNITS
CIRCUIT BREAKER**

CIRCUIT BREAKER PLUG-IN UNITS — FLOOR-OPERABLE

Type of Bkr.	Bkr. Frame Amps.	Trip Rating Amps.	240 V. AC — 125/250 V. DC				120/208 V. AC		Type of Bkr.	Bkr. Frame Amps.	Trip Rating Amps.	600 V. AC — 250 V. DC				277/480 V. AC	
			● 2 Pole		3 Pole		3ϕ, 4W					● 2 Pole		3 Pole		3ϕ 4 W	
			Catalog Number	Price	Catalog Number	Price	Catalog Number	Price				Catalog Number	Price	Catalog Number	Price	Catalog Number	Price
FA	100	15	PFA-22015	\$100.	PFA-32015	\$116.	PFA-32015-N	\$130.	FA	100	15	PFA-26015	\$139.	PFA-36015	\$ 159.	PFA-36015-N	\$ 174.
		20	PFA-22020	100.	PFA-32020	116.	PFA-32020-N	130.			20	PFA-26020	139.	PFA-36020	159.	PFA-36020-N	174.
		30	PFA-22030	100.	PFA-32030	116.	PFA-32030-N	130.			30	PFA-26030	139.	PFA-36030	159.	PFA-36030-N	174.
		40	PFA-22040	100.	PFA-32040	116.	PFA-32040-N	130.			40	PFA-26040	139.	PFA-36040	159.	PFA-36040-N	174.
		50	PFA-22050	100.	PFA-32050	116.	PFA-32050-N	130.			50	PFA-26050	139.	PFA-36050	159.	PFA-36050-N	174.
		60	PFA-22060	100.	PFA-32060	116.	PFA-32060-N	130.			60	PFA-26060	139.	PFA-36060	159.	PFA-36060-N	174.
		70	PFA-22070	121.	PFA-32070	139.	PFA-32070-N	154.			70	PFA-26070	158.	PFA-36070	179.	PFA-36070-N	194.
		90	PFA-22090	121.	PFA-32090	139.	PFA-32090-N	154.			90	PFA-26090	158.	PFA-36090	179.	PFA-36090-N	194.
		100	PFA-22100	121.	PFA-32100	139.	PFA-32100-N	154.			100	PFA-26100	158.	PFA-36100	179.	PFA-36100-N	194.
		FA	100	15	PFA-24015	\$129.	PFA-34015	\$146.			PFA-34015-N	\$161.	KA	225 (600 V.)	125	PKA-26125	353.	PKA-36125	401.	PKA-36125-N	428.
20	PFA-24020			129.	PFA-34020	146.	PFA-34020-N	161.	150	PKA-26150	353.	PKA-36150			401.	PKA-36150-N	428.
30	PFA-24030			129.	PFA-34030	146.	PFA-34030-N	161.	175	PKA-26175	353.	PKA-36175			401.	PKA-36175-N	428.
40	PFA-24040			129.	PFA-34040	146.	PFA-34040-N	161.	200	PKA-26200	353.	PKA-36200			401.	PKA-36200-N	428.
50	PFA-24050			129.	PFA-34050	146.	PFA-34050-N	161.	225	PKA-26225	353.	PKA-36225			401.	PKA-36225-N	428.
60	PFA-24060			129.	PFA-34060	146.	PFA-34060-N	161.									
70	PFA-24070			146.	PFA-34070	161.	PFA-34070-N	176.									
90	PFA-24090			146.	PFA-34090	161.	PFA-34090-N	176.									
100	PFA-24100			146.	PFA-34100	161.	PFA-34100-N	176.									
FA	100			15	PFA-26015	\$139.	PFA-36015	\$ 159.	PFA-36015-N	\$ 174.	LA	400 (600 V.)			250	PLA-26250	746.	PLA-36250	826.	PLA-36250-N	868.
		20	PFA-26020	139.	PFA-36020	159.	PFA-36020-N	174.	300	PLA-26300			746.	PLA-36300	826.	PLA-36300-N	868.
		30	PFA-26030	139.	PFA-36030	159.	PFA-36030-N	174.	350	PLA-26350			746.	PLA-36350	826.	PLA-36350-N	868.
		40	PFA-26040	139.	PFA-36040	159.	PFA-36040-N	174.	400	PLA-26400			746.	PLA-36400	826.	PLA-36400-N	868.
		50	PFA-26050	139.	PFA-36050	159.	PFA-36050-N	174.									
		60	PFA-26060	139.	PFA-36060	159.	PFA-36060-N	174.									
		70	PFA-26070	158.	PFA-36070	179.	PFA-36070-N	194.									
		90	PFA-26090	158.	PFA-36090	179.	PFA-36090-N	194.									
		100	PFA-26100	158.	PFA-36100	179.	PFA-36100-N	194.									
		MA	800 (600 V.)	500	PMA-26500	1018.	PMA-36500	1184.	PMA-36500-N	1239.					500	PMA-26600	1018.	PMA-36600	1184.	PMA-36600-N	1239.
600								600									
700	PMA-26700			1204.	PMA-36700	1433.	PMA-36700-N	1488.	700	PMA-26800	1204.	PMA-36800		1433.	PMA-36800-N	1488.	
800								800									

• Two pole units are supplied with AΦ and CΦ connections. If A-B or B-C connections are required, order 3 pole units.

Circuit Breaker Plug-in Units can be plugged in at any opening of a uminum or copper plug-in duct. Plug-in units with 800 A. frame circuit breakers plug into any 2 adjacent openings spaced 24" apart. Units rated 400 A. require space of two openings.

Add Suffix "LB" to Catalog Number of plug-in units with circuit breaker trip ratings of 225 A. and above when units are to be supplied as lug to bus main breakers; e.g., PLA-36400-LB.

For Grounding Provisions to match internal ground bus add \$12. Add "G" to catalog number; e.g., PLA-36400-G.



I-LINE® BUSWAY

PLUG-IN UNITS CONTROL

I-LINE BUSWAY PLUG-IN UNITS ONLY

COMBINATION FUSIBLE SWITCH AND MOTOR STARTER — Line Voltage — Single Speed — Non-Reversing

208 V. or 230 V. (Specify Voltage)				460 VOLTS				575 VOLTS			
Size	HP	Catalog Number †	Price*	Size	HP	Catalog Number †	Price*	Size	HP	Catalog Number †	Price*
0	3	PSS-3203-SB	\$ 273.	0	5	PSS-3403-SB	\$ 273.	0	5	PSS-3603-SB	\$ 273.
1	7½	PSS-3203-SC	285.	1	10	PSS-3403-SC	285.	1	10	PSS-3603-SC	285.
1	7½	PSS-3206-SC	290.	1	10	PSS-3406-SC	290.	1	10	PSS-3606-SC	290.
2	15	PSS-3206-SD	333.	2	25	PSS-3406-SD	333.	2	25	PSS-3606-SD	333.
2	15	PSS-3210-SD	369.	2	25	PSS-3410-SD	369.	2	25	PSS-3610-SD	369.
3	30	PSS-3210-E	510.	3	50	PSS-3410-E	510.	3	50	PSS-3610-E	510.
3	30	PSS-3210-F	598.	3	50	PSS-3420-E	598.	3	50	PSS-3620-E	598.
4	50	PSS-3220-F	1191.	4	100	PSS-3420-F	1191.	4	100	PSS-3620-F	1191.

•With dual element fuses only.

COMBINATION CIRCUIT BREAKER AND MOTOR STARTER — Line Voltage — Single Speed — Non-Reversing

208 V. or 230 V. (Specify Voltage)				460 VOLTS				575 VOLTS			
Size	HP	Catalog Number †	Price*	Size	HP	Catalog Number †	Price*	Size	HP	Catalog Number †	Price*
0	2	PBS-32015-SB	\$ 287.	0	5	PBS-34015-SB	\$ 287.	0	5	PBS-36015-SB	\$ 287.
0	3	PBS-32020-SB	287.	1	7½	PBS-34020-SC	299.	1	10	PBS-36020-SC	299.
1	5	PBS-32030-SC	299.	1	10	PBS-34030-SC	299.	2	15	PBS-36040-SD	404.
1	7½	PBS-32050-SC	299.	2	15	PBS-34040-SD	404.	2	20	PBS-36070-SD	404.
2	10	PBS-32060-SD	404.	2	20	PBS-34050-SD	404.	2	25	PBS-36060-SD	404.
2	15	PBS-32090-SD	427.	2	25	PBS-34060-SD	404.	3	30	PBS-36070-E	561.
3	20-25	PBS-32100-E	561.	3	30	PBS-34070-E	561.	3	40	PBS-36090-E	561.
3	30	PBS-32125-E	824.	3	40-50	PBS-34100-E	561.	3	50	PBS-36100-E	561.
4	40	PBS-32150-F	1158.	4	60-75	PBS-34125-F	1158.	4	60-75	PBS-36125-F	1158.
4	50	PBS-32200-F	1158.	4	100	PBS-34175-F	1158.	4	100	PBS-36175-F	1158.

*Price does not include overload relay thermal units. Add \$2.50 each if thermal units are to be included and specify size of thermal unit from Table 2 or Table 7 in Motor Control section of Digest.

†Add \$12. if grounding provisions are required and add "G" to catalog number.

†Size 0 through Size 2 units have Type S starters. Type S includes third overload relay as standard.

COMBINATION FUSIBLE SWITCH AND CONTACTORS — Line Voltage — Single Speed — Non-Reversing

208 V. or 230 V. (Specify Voltage)				460 VOLTS				575 VOLTS			
Size	HP	Catalog Number ★	Price	Size	HP	Catalog Number ★	Price	Size	HP	Catalog Number ★	Price
0	3	PSC-3203-SB	\$ 263.	0	5	PSC-3403-SB	\$ 263.	0	5	PSC-3603-SB	\$ 263.
1	7½	PSC-3203-SC	276.	1	10	PSC-3403-SC	276.	1	10	PSC-3603-SC	276.
1	7½	PSC-3206-SC	280.	1	10	PSC-3406-SC	280.	1	10	PSC-3606-SC	280.
2	15	PSC-3206-SD	315.	2	25	PSC-3406-SD	315.	2	25	PSC-3606-SD	315.
2	15	PSC-3210-SD	350.	2	25	PSC-3410-SD	350.	2	25	PSC-3610-SD	350.
3	30	PSC-3210-E	479.	3	50	PSC-3410-E	479.	3	50	PSC-3610-E	479.
3	30	PSC-3220-E	567.	3	50	PSC-3420-E	567.	3	50	PSC-3620-E	567.
4	50	PSC-3220-F	1145.	4	100	PSC-3420-F	1145.	4	100	PSC-3620-F	1145.

•With dual element fuses only.

COMBINATION CIRCUIT BREAKER AND CONTACTOR — Line Voltage — Single Speed — Non-Reversing

208 V. or 230 V. (Specify Voltage)				460 VOLTS				575 VOLTS			
Size	HP	Catalog Number ★	Price	Size	HP	Catalog Number ★	Price	Size	HP	Catalog Number ★	Price
0	2	PBC-32015-SB	\$ 277.	0	5	PBC-34015-SB	\$ 277.	0	5	PBC-36015-SB	\$ 277.
0	3	PBC-32020-SB	277.	1	7½	PBC-34020-SC	289.	1	10	PBC-36020-SC	289.
1	5	PBC-32030-SC	289.	1	10	PBC-34030-SC	289.	2	15	PBC-36030-SD	386.
1	7½	PBC-32050-SC	289.	2	15	PBC-34040-SD	386.	2	20	PBC-36040-SD	386.
2	10	PBC-32060-SD	386.	2	25	PBC-34050-SD	386.	2	25	PBC-36050-SD	386.
2	15	PBC-32070-SD	409.	3	30	PBC-34070-E	530.	3	30	PBC-36050-E	530.
3	20	PBC-32100-E	530.	3	40	PBC-34100-E	530.	3	40	PBC-36070-E	530.
3	30	PBC-32125-E	793.	4	60	PBC-34125-F	1111.	3	50	PBC-36100-E	530.
4	40	PBC-32175-F	1111.	4	75	PBC-34150-F	1111.	4	75	PBC-36125-F	1111.
4	50	PBC-32200-F	1111.	4	100	PBC-34200-F	1111.	4	100	PBC-36150-F	1111.

★Place "S" before size letter suffix for Type S contactor.

COMBINATION FUSIBLE SWITCH AND LIGHTING CONTACTOR

208 V. or 230 V. (Specify Voltage)				575 VOLTS			
Size		Catalog Number	Price		Catalog Number	Price	
30 A.		PSL-4203-M	\$ 267.		PSL-4403-M	\$ 267.	
60 A.		PSL-4206-P	342.		PSL-4406-P	342.	
100 A.		PSL-4210-Q	484.		PSL-4410-Q	484.	
200 A.		PSL-4220-V	1011.		PSL-4420-V	1011.	

1. Lighting contactors do not include holding circuit interlock.

2. Coil voltage will be same as system voltage unless otherwise specified on order.

ADDITIONS	Form	Price	Form	Size 0 & 1	Size 2	Size 3 & 4
Extra Elect. Interlocks (Specify N.O. or N.C.)	X	\$18.	Fused 120 V. Control Circuit Transformer	FT**		
Pilot Light Without Interlock (Specify Color)	P	27.	50 VA	\$ 48.	\$ 67.	
3rd Overload Relay (loss thermal unit) ‡	J	5.	100 VA	99.	99.	\$ 99.
Solid Neutral		12.	300 VA	160.	120.	120.
			500 VA	176.	136.	136.

‡Thermal Unit not included. Type S Starter has provision for 3rd thermal unit as standard.

*Lowest price in each column is for transformer size furnished as standard. Specify VA desired only if larger than standard.



PLUG-IN UNITS AUXILIARY

ENCLOSURES ONLY FOR CIRCUIT BREAKER PLUG-IN UNITS

Type of Breaker	Breaker Frame Size	3 ϕ 3 W. ENCLOSURE		3 ϕ 4 W ENCLOSURE		Complete enclosure less circuit breaker. Order circuit breaker of desired trip rating with prefix FAL, KAL, FHL, or KHL.
		Cat. No.	Price	Cat. No.	Price	
FA, FAH KA, KAH	100 A. 225 A.	PFA-100 PKA-225	\$ 67. 150.	PFA-100N PKA-225N	\$ 82. 177.	

GROUND INDICATOR and NEUTRALIZER PLUG MISCELLANEOUS PLUG-IN UNITS

250 V. 3 POLE		575 V. 3 POLE		Various types of plug-in units including plug-in load centers are available. Contact your nearest Square D field office.
Cat. No.	Price	Cat. No.	Price	
PGD-3200	\$116.	PGD-3600	\$116.	

TRANSFORMER UNITS

Primary Voltage	1 ϕ TRANSFORMER KVA							
	1 KVA		1.5 KVA		2 KVA		3 KVA	
	Cat. No.	Price	Cat. No.	Price	Cat. No.	Price	Cat. No.	Price
240 V. 480 V.	PT-2200	\$237.	PT-2201	\$255.	PT-2202	\$276.	PT-2203	\$326.
	PT-2400	237.	PT-2401	255.	PT-2402	276.	PT-2403	326.
	5 KVA		7.5 KVA		10 KVA		15 KVA	
	Cat. No.	Price	Cat. No.	Price	Cat. No.	Price	Cat. No.	Price
	PT-2205	\$454.	PT-2207	\$546.	PT-2210	\$629.	PT-2215	\$767.
240 V. 480 V.	PT-2405	454.	PT-2407	546.	PT-2410	629.	PT-2415	767.

1. Standard secondary voltage terminals are provided for 120 V. or 240 V. 1 ϕ , 2 W. or 120/240, 1 ϕ , 3 W. connection. Specify secondary voltage if other than standard.

2. Transformer units do not plug into busway and must be used with plug-in switch, circuit breaker or cable tap box. See Distribution Equipment Catalog Section 5630 page 3 for switch or breaker coordination.

3. Four 2½% below normal taps supplied as standard on 3 KVA and larger units. 1, 1.5 and 2 KVA units supplied as standard without taps.

CIRCUIT BREAKER PROTECTION IN SECONDARY CIRCUIT(S) SPECIFY NUMBER OF BREAKER(S) AND SIZE

Ampere	15	20	30	40	50	60	70
1-Pole Price each.	\$ 9.	\$ 9.	\$ 9.	\$ 9.	\$ 9.	\$ 9.	\$ 9.
2-Pole Price each.	14.	14.	14.	14.	14.	14.	14.

CAPACITOR UNITS

Voltage	3 ϕ CAPACITOR KVAR							
	2.5 KVAR		5 KVAR		7.5 KVAR		10 KVAR	
	Cat. No.	Price	Cat. No.	Price	Cat. No.	Price	Cat. No.	Price
240 V. 480 V.	PC-4-2.5	\$ 248.	PC-2-5 PC-4-5	\$573. 371.	PC-2-7.5 PC-4-7.5	\$719. 452.	PC-2-10 PC-4-10	\$837. 502.
	15 KVAR		20 KVAR		25 KVAR		30 KVAR	
	Cat. No.	Price	Cat. No.	Price	Cat. No.	Price	Cat. No.	Price
	PC-2-15 PC-4-15	\$1100. 602.	PC-4-20	\$753.	PC-4-25	\$937.	PC-4-30	\$1108.

1. Capacitor units do not plug into busway and must be used with plug-in switch or circuit breaker. See Distribution Equipment Catalog Section 5630 page 4 for switch or breaker coordination.

2. Intermediate sizes between 1 KVAR and 30 KVAR are available. Contact Square D field office.

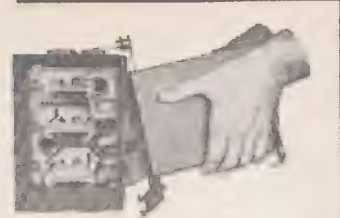
3. Discharge resistor provided in accordance with NEC rules.



PLUG-IN UNITS, TYPE APD & SD

Not for I-LINE® Plug-in Duct

Refer to Page 105 for Units for I-LINE Plug-in Duct



PLUG-IN AND CLAMP ON UNITS

PLUG-IN AND CLAMP-ON UNITS CIRCUIT BREAKER (FOR TYPES APD & SD PLUG-IN DUCT)

			240 V. AC		125/250 V. DC		120/208 V. AC					600 V. AC — 250 V. DC			277/480 V. AC		
Type of Bkr.	Bkr. Frame Amps.	Trip Rating Amps.	2 Pole		3 Pole		3 ϕ , 4 W.		Type of Bkr.	Bkr. Frame Amps.	Trip Rating Amps.	†2 Pole		3 Pole		3 ϕ , 4 W.	
			Cat. No.	Price	Cat. No.	Price	Cat. No.	Price				Cat. No.	Price	Cat. No.	Price	Cat. No.	Price
FA	100 240 V.	15	SD-76215	\$100.	SD-76315	\$116.	SD-76915	\$130.	FA	100 600 V.	15	SD-75615	\$139.	SD-75715	\$159.	SD-75415	\$174.
		20	SD-76220	100.	SD-76320	116.	SD-76920	130.			20	SD-75620	139.	SD-75720	159.	SD-75420	174.
		30	SD-76230	100.	SD-76330	116.	SD-76930	130.			30	SD-75630	139.	SD-75730	159.	SD-75430	174.
		40	SD-76240	100.	SD-76340	116.	SD-76940	130.			40	SD-75640	139.	SD-75740	159.	SD-75440	174.
		50	SD-76250	100.	SD-76350	116.	SD-76950	130.			50	SD-75650	139.	SD-75750	159.	SD-75450	174.
		70	SD-75270	121.	SD-75370	139.	SD-75970	154.			70	SD-75670	158.	SD-75770	179.	SD-75470	194.
		100	SD-75216	121.	SD-75316	139.	SD-75916	154.			100	SD-75616	158.	SD-75716	179.	SD-75416	194.
			480 V. AC				277/480 V. AC										
Type of Bkr.	Bkr. Frame Amps.	Trip Rating Amps.	2 Pole		3 Pole		3 ϕ , 4 W.		Type of Bkr.	Bkr. Frame Amps.	Trip Rating Amps.						
			Cat. No.	Price	Cat. No.	Price	Cat. No.	Price									
FA	100 480 V.	15	SD-71215	\$129.	SD-71315	\$146.	SD-71415	\$161.	KA	225 600 V.	125	SD-78617	353.	SD-78717	401.	SD-78417	428.
		20	SD-71220	129.	SD-71320	146.	SD-71420	161.			150	SD-78618	353.	SD-78718	401.	SD-78418	428.
		30	SD-71230	129.	SD-71330	146.	SD-71430	161.			175	SD-78619	353.	SD-78719	401.	SD-78419	428.
		40	SD-71240	129.	SD-71340	146.	SD-71440	161.			200	SD-78626	353.	SD-78726	401.	SD-78426	428.
		50	SD-71250	129.	SD-71350	146.	SD-71450	161.			225	SD-78627	353.	SD-78727	401.	SD-78427	428.
		70	SD-71270	146.	SD-71370	161.	SD-71470	176.			250	SD-67628	746.	SD-67728	826.	SD-67428	868.
		100	SD-71216	146.	SD-71316	161.	SD-71416	176.			300	SD-67636	746.	SD-67736	826.	SD-67436	868.
									LA	400 600 V.	350	SD-67638	746.	SD-67738	826.	SD-67438	868.
											400	SD-67646	746.	SD-67746	826.	SD-67446	868.
*FOLLOWING UNITS ARE CLAMP-ON (See Footnote Cu. or Al.)																	
MA	800 600 V.	500	SD-69656	1018.	SD-69756	1184.	SD-69456	1239.	MA	800 600 V.	600	SD-69666	1018.	SD-69766	1184.	SD-69466	1239.
		700	SD-69676	1204.	SD-69776	1433.	SD-69476	1488.			700	SD-69676	1204.	SD-69776	1433.	SD-69476	1488.
		800	SD-69686	1204.	SD-69786	1433.	SD-69486	1488.			800	SD-69686	1204.	SD-69786	1433.	SD-69486	1488.

*FOLLOWING UNITS ARE CLAMP-ON (See Footnote Cu. or AL.)

Circuit Breaker Plug-in Units can be plugged in at any opening of copper or aluminum plug-in duct. 400 A. Plug-in unit plugs into any 2 adjacent openings spaced 24" apart.

NOTE: Above clamp-on unit catalog numbers apply only to units for connecting to **COPPER** plug-in duct. For connecting to **ALUMINUM** plug-in duct, use prefix "APD" instead of "SD" in catalog number. When ordering clamp-on units specify catalog number of duct involved.

***Circuit Breaker clamp-on units** can be bolted to busses of plug-in duct between any two straight sections, or at the end of a plug-in duct run. When using at end of run, order an end closure. When ordering clamp-on unit specify end or center type and rating of duct to which unit will be connected. Clamp-on units can be supplied as lug to bus main breakers by adding suffix letters "LB" to standard catalog numbers.

†For 2 pole, 250 V. dc, 100 A. frame size plugs, add suffix letters "DC" to catalog numbers in this group.

PLUG-IN UNITS — FUSIBLE (QMB) TYPE A — (FOR TYPES APD & SD PLUG-IN DUCT)

Rating Amp.	240 V. AC — 250 V. DC				120/208 V. AC		600 V. AC				277/480 V. AC	
	2P 2 FUSE		3P 3 FUSE		4P 3 FUSE		2P 2 FUSE		3P 3 FUSE		4P 3 FUSE	
	Cat. No.	Price	Cat. No.	Price	Cat. No.	Price	Cat. No.	Price	Cat. No.	Price	Cat. No.	Price
30 A	SD-2203	\$ 56.	SD-3203	\$ 70.	SD-4203	\$ 83.	SD-2603	\$ 58.	SD-3603	\$ 75.	SD-4603	\$ 87.
60 A	SD-2206	63.	SD-3206	75.	SD-4206	87.	SD-2606	68.	SD-3606	81.	SD-4606	92.
100 A	SD-2210	95.	SD-3210	112.	SD-4210	124.	SD-2610	100.	SD-3610	116.	SD-4610	134.
200 A	SD-2220	167.	SD-3220	195.	SD-4220	218.	SD-2620	184.	SD-3620	204.	SD-4620	229.
400 A	SD-2240	347.	SD-3240	481.	SD-4240	518.	SD-2640	367.	SD-3640	481.	SD-4640	518.
600 A	SD-2260	602.	SD-3260	668.	SD-4260	730.	SD-2660	639.	SD-3660	668.	SD-4660	730.

Fusible Switch Type A Plug-in Units — 30 to 200 A. can be plugged in at any opening of plug-in duct. Horsepower ratings are the same as on QMB panel units. The 400 A. and 600 A. units plug into two openings in the duct, 24" apart.

Unfused Units — Use price of 250 V. fusible switch units for either 250 V. or 600 V. application.

Class J Fuses — Add suffix - J to catalog number (600 V. and 277/480 V. only) for Class J fuse provisions. For 2, 3, or 4 pole units, 30 through 400 amp., add \$6. price per unit. For 2 pole, 600 amp. unit, add \$37. for 3 or 4 pole, 600 amp. unit, add \$55.

FUSIBLE COVER OPERATED PLUG-IN UNITS FOR TYPES APD AND SD PLUG-IN DUCT ARE OBSOLETE AND NO LONGER AVAILABLE. SUBSTITUTE QMB UNITS FROM TABLE ABOVE.



POWER-STYLE® SWITCHBOARDS

POWER-STYLE Switchboards are designed for use as service entrance equipment for power and lighting distribution in industrial, commercial and institutional type buildings. The unlimited range of available equipment coupled with the following features makes this the finest and most complete line of switchboards available.

DEVICES AVAILABLE:

- Molded Case Circuit Breakers in group or individually mounted construction; 2000 ampere maximum.
- QMB Fusible switches up to 1200 amperes.
- QMB Molded Case Circuit Breakers.
- QMB Motor Starters to control motors.
- Low Voltage Power Circuit Breakers up to 4000 Amperes.
- BOLT-LOC® Bolted Pressure Contact switches up to 4000 amperes.
- Metering equipment for Power Company or customer's use.
- I-LINE® Bus Duct connections for plug-in or feeder duct.

CONSTRUCTION:

- Die formed steel framework, welded and bolted together.
- Removable rolled edge steel plates.
- Indoor or weatherproof enclosures.
- Standard depths from 14" to 60"

AMPERE RANGE: MAIN BUS SIZE

Service Section Type: 400 — 2000 Amperes

Multi-Section Type: 400 — 4000 Amperes

AVAILABLE IN NEMA CLASS I, II OR III TYPE CONSTRUCTION AS REQUIRED

MULTI-SECTION SWITCHBOARDS

Multi-Section Switchboards usually consist of more than one frame and contain bussing for large services 400 — 4000 amperes. Any combination of metering with main and branch overcurrent protective devices is available to serve individual requirements. The photographs below illustrate a small portion of the many available types and combinations.



Multi-Section
Fusible Switchboard



Multi-Section Circuit Breaker Switchboard
with I-LINE Distribution Panel



Service Section Switchboard with
I-LINE Distribution Panel

SERVICE SECTION SWITCHBOARDS — Single Section

Service Section Switchboards are single frame switchboards with a maximum of 2000 ampere main bus and containing metering and/or overcurrent protection for distribution circuits. The sections are 14" deep and vary in width depending on the component devices. Designed for NEMA Class 1 construction, the section is completely front accessible and intended for mounting against a wall.

The above listed devices are available. Current transformer compartments can be arranged for hot or cold sequence metering. When required, a pull box or auxiliary section can be added for wiring space or bus transition.

Price quotations available from your local field engineer.

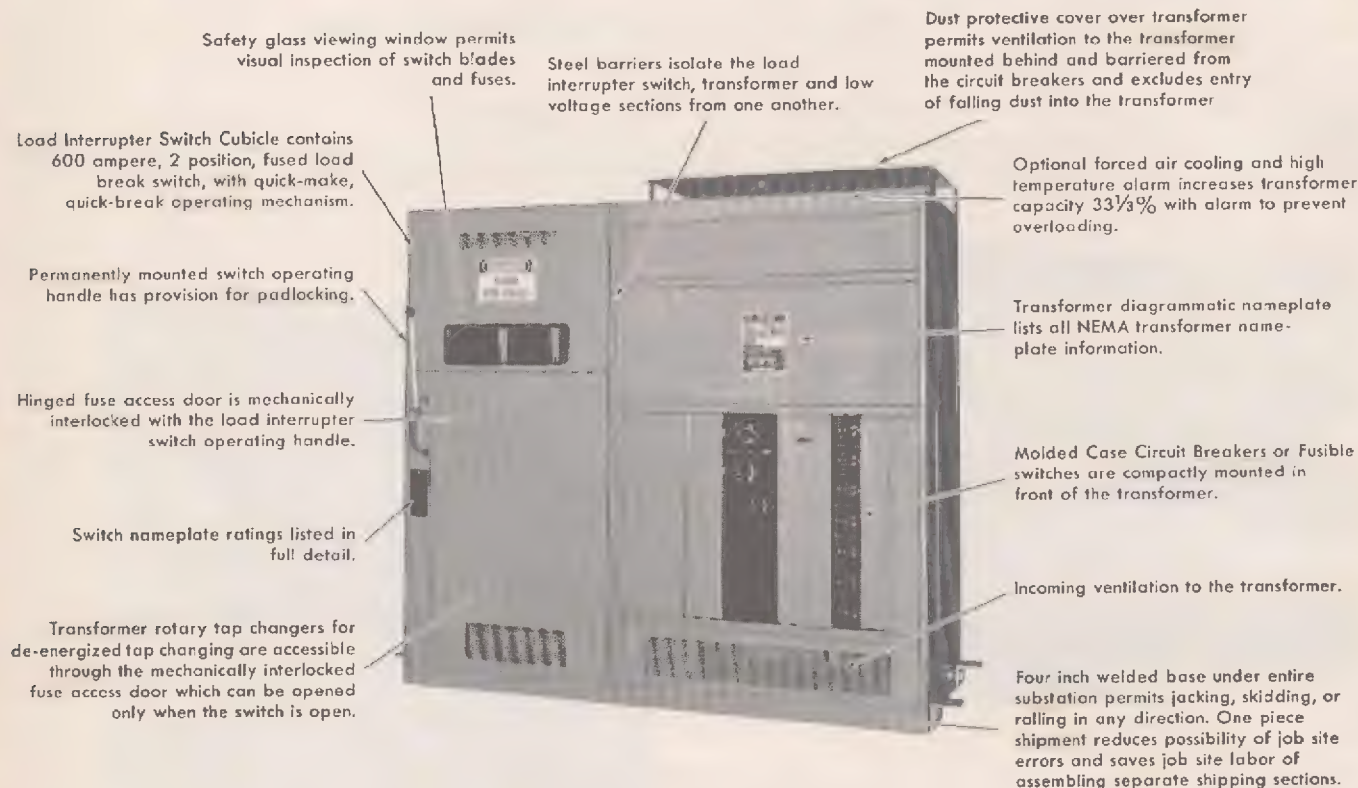


POWER-ZONE[®] UNIT SUBSTATIONS & SWITCHGEAR

Square D offers a complete line of POWER-ZONE Unit Substations, high voltage load interrupter switchgear and metal enclosed low voltage drawout switchgear. POWER-ZONE construction incorporates the applicable standards of NEMA, USASI and IEEE, plus many extras for better service and system reliability.

POWER-ZONE PACKAGE UNIT SUBSTATIONS

Very compact, yet versatile in design and application to accommodate a large variety of indoor application requirements. This substation is popular in schools, office buildings, shopping centers, factories and department stores.



Dimensions — Depth — 36", Width — 82", Height — 79½" (4.16 KV Dimensions shown)

GENERAL SPECIFICATIONS — (See Catalog Section 6110 for detailed description).

- Sizes — 75-750 KVA, 3 phase, forced air cooling to increase capacity 33⅓%
- Primary voltages — Up to 13.8 KV.
- Secondary voltages — Up to 600 volts.
- Sound Levels: 4.16 KV; 50 DB up through 300 KVA, 53 DB for 500 KVA, 57 DB for 750 KVA. 13.8 KV; 52 DB up through 150 KVA, 55 DB through 500 KVA.
- Front Accessibility — Rear may be placed against wall to conserve space.
- Transformer — Class H insulation, 150° C rise.
- Four adjustable high-voltage taps — Accessible through front.
- Ventilation — Through front and top.
- High-voltage termination — With load interrupter switch or oil cutouts — fused or unfused.
- Low voltage section — With molded case circuit breakers, QMB fusible switches, QMB circuit breakers, QMB motor starters and/or instrumentation.
- Sizes: 4.16 KV; 82" wide, 36" deep, 79½" high. 13.8 KV; 86" wide, 36" deep, 79½" high. Will pass through normal industrial doorways.

Price quotations available from your local field engineer.

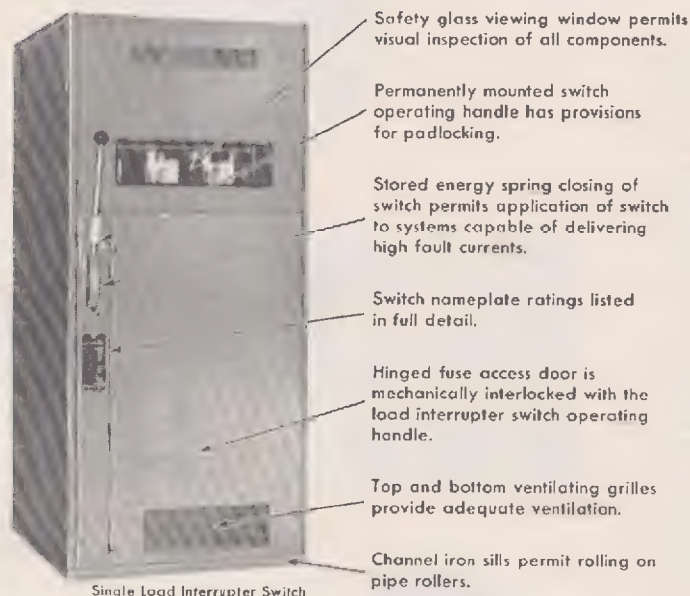


POWER-ZONE® UNIT SUBSTATIONS & SWITCHGEAR

Square D offers a complete line of POWER-ZONE Unit Substations, high voltage load interrupter switchgear and metal enclosed low voltage drawout switchgear. POWER-ZONE construction incorporates the applicable standards of NEMA, USASI and IEEE, plus many extras for better service and system reliability.

HIGH-VOLTAGE LOAD INTERRUPTER SWITCHGEAR

To control the high-voltage circuits popular in so many modern distribution systems, Square D offers Load Interrupter Switchgear using high voltage switches and fuses to provide a dependable, convenient and economical means for handling high-voltage power.



(See Catalog Section 6140 for detailed description).

GENERAL SPECIFICATIONS

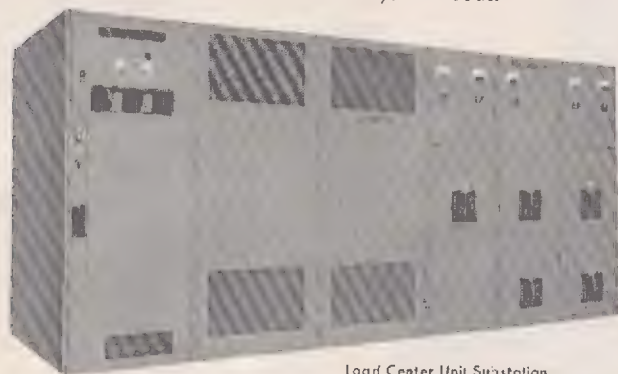
- Voltage up to 13.8 KV.
- Incoming and outgoing cable terminations — pothead if required.
- Type HVL load-break load interrupter switches — fused or not fusible.
- High-voltage main bussing.
- Components completely enclosed in $\frac{1}{8}$ " thick steel housing.
- Facilities for high-voltage metering.
- Indoor or weather-proof construction.



Three Bay Load Interrupter Switchgear with Fused Feeder Switches

POWER-ZONE LOAD CENTER TYPE UNIT SUBSTATIONS

Designed and manufactured to meet any load center unit substation requirements, this equipment combines high-voltage sections, transformer sections, with low-voltage sections of switchgear, switchboards or motor control centers tailored to the system needs.



Load Center Unit Substation

LOW-VOLTAGE METAL ENCLOSED DRAWOUT SWITCHGEAR

For increased systems reliability and easier equipment maintenance on systems up to 600 volts, Square D offers Low-Voltage Metal-Enclosed Switchgear. Draw-out construction enables low-voltage power circuit breakers to project from their enclosures for quick, convenient inspection, adjustment or replacement. See Catalog Section 6130 for detailed description.



Drawout Switchgear

Price quotations available from your local field engineer.



CONTROL, BRAKES, LIMIT SWITCHES, DISCONNECTS

THE MOST COMPLETE LINE FOR CRANES



YOUNGSTOWN® POWER LIMIT SWITCHES

Power type disconnects motor from the line. Quick-make, quick-break high interrupting contacts. Tripping point unaffected by stretching of hoist cables. Resets automatically when hoist controller is moved to lower. Small, compact for easy mounting on crane trolleys. These **Class 6170** Limit Switches are built in several sizes for single motor hoists, in duplex style for 2-motor hoists of both ac and dc cranes.



MANUAL-MAGNETIC DISCONNECTS

The fastest, easiest way to interrupt ac & dc crane power. Operable from two locations remotely by push button located in the crane cab or at the point where operator leaves the crane where the disconnect is normally mounted. Easy to operate. High interrupting capacity. Provides auxiliary functions . . . electrical interlocks for crane signal lights and other purposes. **Bulletin 6140/6440** lists many sizes for ac and dc cranes.



ELECTRIC FOOT BRAKES

Eliminates hydraulic brake troubles. Provides for slowdown or quick stop from foot master. Parking feature applied by Push Button. Being all-electric, **Class 5060 AT Brakes** are well suited for man-trolley and floor-operated cranes, coke pushers and transfer cars. Popular companion to well-known **Class 5010 WB Magnetic Brakes** for hoist motions of cranes. Both AT and WB Brakes built for ac and dc cranes.



FRONTLINE™

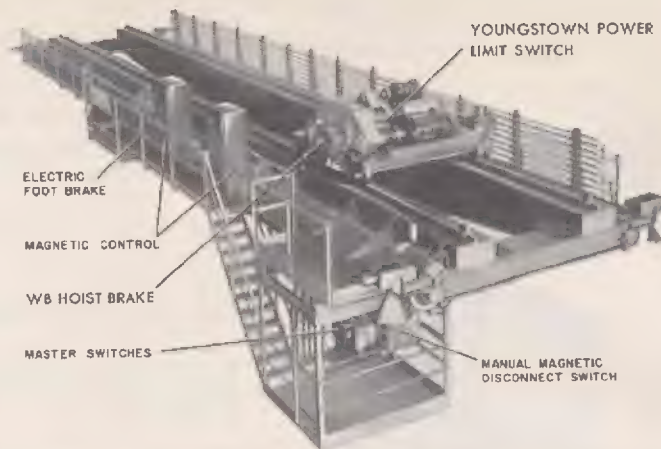
DC MAGNETIC CONTROL

The new front-connected, front-mounted and front-accessible **Class 6121** crane control is designed for the user. Use of the new **Class 7004** Type H contactors and **Class 7001** Type K relays provide ease of inspection and maintenance. Load controlled flexibility is achieved through use of Type SI TIME-CURRENT acceleration relays to reduce loaded hook swing.



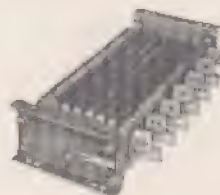
COMPACT MAGNETIC CONTROL

Better than manual control, for small capacity cranes and for small trolley motors. Being magnetic, crane can be arranged for normal cab operation, also from pendant push button in off-hours. Cuts maintenance of motor, controller and crane by automatic control of accelerating and plugging functions. Available up to 55 hp, 230 volts in dc **Class 6132** style. Also built for floor and cab-operated ac Cranes in many hp sizes as shown in **Bulletin 6131**.



STATA® AC CRANE CONTROL

Using thyristors to provide full stepless control over the entire speed range, the new **Class 6401** crane control is designed to provide the ultimate in ac crane control. The major features are precise load spotting, fast, efficient response, increased safety and convenient inspection and maintenance.



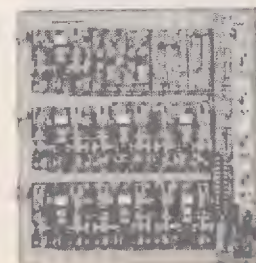
TAB-WELD® RESISTORS

The original welded plate resistor section designed to eliminate burning at grid-eyes and at tap-plates. Built in continuous capacities up to 500-amperes carrying capacity. Plates are corrosion-resistant alloy steel and have a stable resistance value at cold and working temperatures. **Bulletin 6715** lists all sizes.



SPEED CONTROL MASTER SWITCHES

Class 9004 Master Switches are available in Type VM vertical and Type CM cam styles. Each has short-throw from off to full on positions for easy operation. Narrow width permits grouping of several Masters within easy reach of the operator. Mill accessory Master Switches are small, compact units for crane and mill drives where fewer number of speed-points are satisfactory. All **Class 9004** Masters are designed for mounting individually or into consoles or bench type control stations.



AC FREQUENCY RELAY MAGNETIC CONTROL

Provides positive operation of ac wound-rotor motors because acceleration, plugging and speed-limiting functions are accurately controlled by one set of Frequency Relays operating in a resonant circuit from the motor slip frequency. This exclusive **Class 6400** control permits maximum torque without spinning crane wheels . . . allows low torque points on 2-line bucket cranes for smoother handling without danger of overspeeding.



MAGNETS & MAGNET CONTROLLERS

SCRAP HANDLING MAGNETS

1309

CLASS H INSULATION

ALUMINUM WINDINGS

230 VOLTS DC

Type	Diameter (Inches)	Approximate Net and Shipping Weights of Magnet (Pounds)	Cold Current (Amperes)	Recommended Generator (KW)	Recommended Rectifier 230v only (KW)	Recommended Cable	Price
40SH	40	1500	33	5	7.8	#8	53451.
45SH	45	2300	37	5	9	#8	4042.
45DSH	45	2650	40	7.5	10	#8	4500.
54SH	54	3600	53	10	13	#8	5319.
54DSH	54	4000	59	10	13.5	#6	5900.
63SH	63	5400	73	13	17	#6	7300.
63DSH	63	6100	78	14	18	#6	8200.
69SH	69	6800	89	17	21	#4	9087.
69DSH	69	7700	95	17	22	#4	9600.
75SH	75	9000	105	20	24	#4	11581.
75DSH	75	10100	115	20	26.5	#4	12600.
87SH	87	13000	209/129	35	48	#1/0	16049.
87DSH	87	14800	237/140	35	55	#1/0	18500.

STEEL MILL MAGNETS

1310

CLASS H INSULATION

ALUMINUM WINDINGS

230 VOLTS DC

Type	Diameter (Inches)	Approximate Net and Shipping Weights of Magnet (Pounds)	Cold Current (Amperes)	Recommended Generator (KW)	Recommended Rectifier 230v only (KW)	Recommended Cable	Price
SM-390	39	2050	31	7.5	10	#8	54042.
SM-470	47	3420	43	10	15	#6	5319.
SM-580	58	5580	67	13	17.5	#4	8094.
SM-580-D	58	6430	73	15	20	#4	10800.
SM-670	67	7410	86	17	25	#3	11581.
SM-680-D	68	9380	96	20	25	#3	15025.
SM-680-ED	68	11100	100	20	30	#2	17500.
SM-840-D	84	15400	221/134	35	55	#0	23477.

▲ Generators may be driven by a separate gas or Diesel engine, or be direct-connected to the main engine drive of the crane. Regulation of generated-voltage within close limits is required in either case to insure proper operation of both magnet and magnet-controller

● For cable lengths of 125 feet or less.

MAGNET CONTROLLERS

1315

AUTOMATIC-DISCHARGE — Type AD 230 VOLTS D.C.

Cold Magnet Current (Amperes)	FOR USE WITH MASTER SWITCH TYPE PILOT DEVICE*				FOR USE WITH PUSH BUTTON TYPE PILOT DEVICE*			
	General Purpose NEMA 1 Enclosure		Weather Resistant NEMA 3 Enclosure		General Purpose NEMA 1 Enclosure		Weather Resistant NEMA 3 Enclosure	
	Type	Price	Type	Price	Type	Price	Type	Price
3-8	AD-01†	\$ 371.	AD-01W†	\$ 481.	AD-02●	\$ 384.	AD-02W●	\$ 494.
8-25	AD-03†	371.	AD-03W†	481.	AD-04●	384.	AD-04W●	494.
25-80	AD-13†	516.	AD-13W†	553.	AD-14●	529.	AD-14W●	566.
80-130	AD-15†	652.	AD-15W†	718.	AD-16●	695.	AD-16W●	731.
Type 87DSH Type SM-840D	AD-21†	1604.	AD-21W†	1658.	AD-22●	1617.	AD-22W●	1671.

*PILOT DEVICES (Correct pilot devices can be determined by matching symbols given after controller type number with code designation in table below).

Description	Code	Price
Class 9004 Type MG-1 "LIFT-DROP" Master Switch	†	\$47.
Class 1315 Type DM-225A "LIFT-DROP" Master Switch	†	95.
Class 9001 Type TY-312 "LIFT-DROP" Pushbutton Station	●	34.



AC MOTOR STARTING SWITCHES — TYPE K

WITHOUT OVERLOAD PROTECTION

CLASS
2510
2511
2512

Motor starting switches provide manual "on-off" control for single or three phase motors, where overload protection is not required or is separately mounted. They can also be used with non-motor loads such as resistance heaters. All enclosed and flush mounting toggle types are provided with handle guard/lockout as standard. (See page 119 for dimensions.)

NON-REVERSING

CLASS 2510

600 VOLTS MAX. AC

Type of Operator	No. of Poles	Features	General Purpose Enclosure Surface Mounting NEMA Type 1		General Purpose Flush Mounting (Without Pull Box)▲								Water-tight and Dust-tight Enclosure NEMA Types 4 & 5(Class I Groups B, C & D & Class II Groups E, F & G Enclosure NEMA Types 7 & 9(Open Type ▲	
					Gray Flush Plate		Standard Stainless Steel Flush Plate		Jumbo Stainless Steel Flush Plate									
					Type	Price	Type	Price	Type	Price	Type	Price						
Toggle	2	Standard With Pilot Light: 115 V. AC 230 V. AC	KG-1★	\$ 4.60	KF-1	\$ 4.10	KS-1	\$ 4.60			KW-1	\$22.00	KR-1	\$22.00	KO-1★	\$ 3.60		
			KG-1A	9.60	KF-1A	9.10	KS-1A	9.60	KSJ-1A	\$11.10	KW-1A	57.00			KO-1A	8.60		
			KG-1B	9.60	KF-1B	9.10	KS-1B	9.60	KSJ-1B	11.10	KW-1B	57.00			KO-1B	8.60		
	3	Standard With Pilot Light: 208-240 V. AC 440-600 V. AC	KG-2★	10.50	KF-2	10.00	KS-2	10.50			KW-2	27.00	KR-2	27.00	KO-2★	9.50		
			KG-2B	15.50	KF-2B	15.00	KS-2B	15.50	KSJ-2B	17.00	KW-2B	62.00			KO-2B	14.50		
			KG-2C	15.50	KF-2C	15.00	KS-2C	15.50	KSJ-2C	17.00	KW-2C	62.00			KO-2C	14.50		
Key†	2	Standard With Pilot Light: 115 V. AC 230 V. AC	KG-3	6.60	KF-3	6.10	KS-3	6.60							KO-3	5.60		
			KG-3A	11.60	KF-3A	11.10	KS-3A	11.60	KSJ-3A	13.10					KO-3A	10.60		
			KG-3B	11.60	KF-3B	11.10	KS-3B	11.60	KSJ-3B	13.10					KO-3B	10.60		
	3	Standard With Pilot Light: 208-240 V. AC 440-600 V. AC	KG-4	12.50	KF-4	12.00	KS-4	12.50							KO-4	11.50		
			KG-4B	17.50	KF-4B	17.00	KS-4B	17.50	KSJ-4B	19.00					KO-4B	16.50		
			KG-4C	17.50	KF-4C	17.00	KS-4C	17.50	KSJ-4C	19.00					KO-4C	16.50		

REVERSING

CLASS 2511

600 VOLTS MAX. AC

Type of Operator	No. of Poles	Motor Types for Which Suitable	Features (Including Mechanical Interlock)	General Purpose Enclosure Surface Mounting NEMA Type 1		With Flush Plate for Cavity Mounting (Without Pull Box)‡	
				Type	Price	Type	Price
				KG-11	\$20.	KF-11	\$19.
Toggle	2	Single Phase 3-Lead Repulsion-Induction	Standard With Pilot Light: 115 V. AC 230 V. AC	KG-11A	28.	KF-11A	27.
				KG-11B	28.	KF-11B	27.
	3	Three Phase Also Single Phase Capacitor, Split Phase, or 4-Lead Repulsion-Induction	Standard With Pilot Light: 110-120 V. AC 208-220 V. AC 440-600 V. AC	KG-22	31.	KF-22	30.
				KG-22A	39.	KF-22A	38.
				KG-22B	39.	KF-22B	38.
				KG-22C	39.	KF-22C	38.

ELECTRICAL RATINGS

Volts	Maximum Horsepower	
	Single Phase (2 or 3 Pole)	Three Phase (3 Pole)
110	1	2
220	2	3
440-600		5

Resistive load rating: 30 amperes at 250 volts max., 20 amperes at 600 volts max.

Tungsten lamp load rating: 15 amperes at 277 volts max. line to neutral, and 480 volts max. line to line.

TWO SPEED

CLASS 2512

600 VOLTS MAX. AC

Type of Operator	No. of Poles	Motor Types for Which Suitable	Features (Including Mechanical Interlock)	General Purpose Enclosure Surface Mounting NEMA Type 1		With Flush Plate for Cavity Mounting (Without Pull Box)‡	
				Type	Price	Type	Price
				KG-11	\$20.	KF-11	\$19.
Toggle	2	Single Phase Two Winding (3-Lead)	Standard With 2 Pilot Lights: 115 V. AC 230 V. AC	KG-11A	36.	KF-11A	35.
				KG-11B	36.	KF-11B	35.
	3	Three Phase Separate Winding (Wye-Connected)*	Standard With 2 Pilot Lights: 208-240 V. AC 440-600 V. AC	KG-22	31.	KF-22	30.
				KG-22B	47.	KF-22B	46.
				KG-22C	47.	KF-22C	46.

PILOT LIGHT KITS — see page 216.

★Standard packaging quantity — 10.

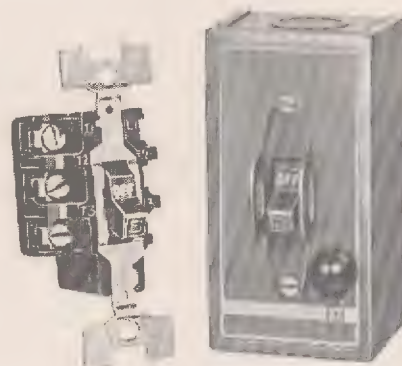
▲Open and flush mounting types fit standard single gang switch box. Open types without pilot light include nameplate. Open types with pilot light are for replacement use only.

□Furnished with one 3/4" P.T. in bottom (reversible for top feed). To obtain 3/4" P.T. top and bottom, add suffix letter "H" to type number and add \$2.00 to price.

†Furnished with 2 keys. For additional keys see page 115.

‡Not suitable for wall mounting — pull box not available.

*Standard hp ratings apply for constant or variable torque motors only. Ratings for constant hp applications are 2 hp max. at 220 V., 3 hp max. at 440-600 V.



Class 2510
Type KO-2

Class 2510
Type KG-1A

ORDERING INFORMATION REQUIRED —
Class and type number.



TYPE F — MANUAL STARTERS

FRACTIONAL HORSEPOWER — MELTING ALLOY OVERLOAD RELAY

Fractional horsepower manual starters provide overload protection as well as "on-off" control for small ac single phase or dc motors. Open types without pilot light and all single-unit flush mounting versions fit a standard single gang switch box. (See page 119 for dimensions.)

CLASS
2510

SINGLE-UNIT TYPES

115-230 VOLTS

Type of Operator	No. of Poles	Features	General Purpose Enclosure Surface Mounting NEMA Type 1		General Purpose Flush Mounting (Without Pull Box)						Water-tight and Dust-tight Enclosure NEMA Types 4 & 5		Class I Groups B, C & D & Class II Groups E, F & G Enclosure NEMA Types 7 & 9		Open Type A	
			Type	* Price	Type	* Price	Type	* Price	Type	* Price	Type	* Price	Type	* Price	Type	* Price

BASIC STARTER

Toggle	1	Standard, With Pilot Light	FG-1★ FG-1P	\$7.50 10.50	FF-1 FF-1P	\$ 7. 10.	FS-1 FS-1P	\$7.50 10.50	FSJ-1P	\$12.					FO-1★ FO-1P	\$6.50 9.50
	2	Standard, With Pilot Light	FG-2★ FG-2P	8.50 11.50	FF-2 FF-2P	8. 11.	FS-2 FS-2P	8.50 11.50	FSJ-2P	13.					FO-2★ FO-2P	7.50 10.50
Key†	1	Standard, With Pilot Light	FG-3 FG-3P	9.50 12.50	FF-3 FF-3P	9. 12.	FS-3 FS-3P	9.50 12.50	FSJ-3P	14.					FO-3 FO-3P	8.50 11.50
	2	Standard, With Pilot Light	FG-4 FG-4P	10.50 13.50	FF-4 FF-4P	10. 13.	FS-4 FS-4P	10.50 13.50	FSJ-4P	15.					FO-4 FO-4P	9.50 12.50

STARTER WITH HANDLE GUARD/LOCKOUT

Toggle	1	Standard, With Pilot Light, With (2) 3/4" P.T. and Pilot Light	FG-5 FG-5P	8.50 11.50	⊙ ⊙		⊙ ⊙		⊙ ⊙		FW-1‡ FW-1P‡ FW-1H FW-1PH	\$24. 59. 26. 61.	FR-1‡ FR-1H	\$24. 26.		
	2	Standard, With Pilot Light, With (2) 3/4" P.T. and Pilot Light	FG-6 FG-6P	9.50 12.50	⊙ ⊙		⊙ ⊙		⊙ ⊙		FW-2‡ FW-2P‡ FW-2H FW-2PH	25. 60. 27. 62.	FR-2‡ FR-2H	25. 27.		

*Prices include one overload relay thermal unit. Deduct \$1.50 if thermal unit is omitted.

★Standard packaging quantity — 10.

⊙Order basic starter plus separate handle guard kit.

†Furnished with 2 keys.

▲Open types without pilot light include nameplate, and can be used for replacement in Type F or old design Type A enclosures. Open types with pilot light are suitable only for replacement use in Type F enclosures.

‡Furnished with one 3/4" P.T. in bottom (reversible for top feed).

ACCESSORIES

Description	Type	Price
Handle guard/lockout kit for Types FF, FG, FS, or FSJ	FL-1	\$1.00
Additional key for Type F or K key operated devices	FK-1	.30
Pilot light kit for Types FF or FG	See page 216	

ELECTRICAL RATINGS

No. of Poles	Volts	Maximum Horsepower	
		AC Sing'l Phase	DC
1	115-230	1	...
2	115-230	1	3/4

ORDERING INFORMATION REQUIRED

1. Class and type number of starter.
2. Type number of thermal unit. Select thermal unit from Table 1 on page 217.
3. Horsepower, voltage, and full load current rating of motor.



Type FG-2



Type FW-2P



Type FO-2



Type FF-4



Type FR-2



MANUAL STARTERS—TYPE F

FRACTIONAL HORSEPOWER — MELTING ALLOY OVERLOAD RELAY

CLASS
2510

DUPLEX UNITS

GENERAL PURPOSE ENCLOSURES

115-230 VOLTS

Type of Operator	No. of Poles	Features	General Purpose Flush Mounting (Without Pull Box)▲							
			General Purpose Enclosure Surface Mounting NEMA Type 1		Gray Flush Plate for Cavity Mounting Only		Stainless Steel Flush Plate for Wall or Cavity Mounting		Jumbo Stainless Steel Flush Plate for Wall or Cavity Mounting	
			Type	* Price	Type	* Price	Type	* Price	Type	* Price

ONE STARTER IN OVERSIZE ENCLOSURE

Toggle	2	Standard With Pilot Light	FG-02	\$12.50						
			FG-02P	15.50						
Key†	2	With Pilot Light	FG-04P	17.50						

TWO STARTERS IN ONE ENCLOSURE

Toggle	2 Each Str.	Standard With Pilot Light on Each	FG-22	20.00	FF-22	\$19.00				
			FG-22P	31.00	FF-22P	30.00	FS-22P	\$31.00	FSJ-22P	\$34.00
Key†	2 Ea. Str.	With Pilot Light on Each	FG-44P	35.00	FF-44P	34.00	FS-44P	35.00	FSJ-44P	38.00

STARTER AND "AUTO-OFF-HAND" SPDT SELECTOR SWITCH (AC ONLY)

Toggle	1	Standard With Pilot Light	FG-71	17.00	FF-71	16.00	FS-71P	20.00	FSJ-71P	23.00
			FG-71P	20.00	FF-71P	19.00				
	2	Standard With Pilot Light	FG-72	18.00	FF-72	17.00	FS-72P	21.00	FSJ-72P	24.00
			FG-72P	21.00	FF-72P	20.00				
Key†	2	With Pilot Light	FG-74P	23.00	FF-74P	22.00	FS-74P	23.00	FSJ-74P	26.00

*Prices include one overload relay thermal unit per starter. Deduct \$1.50 each if thermal units are omitted.
 ▲Stainless steel versions fit standard 2-gang switch box. Type FF starters are not suitable for wall mounting — pull box not available.
 †Furnished with 2 keys. For additional keys see page 115.

ELECTRICAL RATINGS

No. of Poles	Volts	Max. HP	
		AC Single Phase	DC
1	115-230	1	
2	115-230	1	3/4

⚡ Devices with selector switch not suitable for use on dc

ORDERING INFORMATION REQUIRED

1. Class and type number of starter.
2. Quantity and type number of thermal units. Select thermal units from Table 1 on page 217.
3. Horsepower, voltage, and full load current rating of motor.

CLASS
2512

TWO SPEED STARTERS

FOR TWO WINDING (3-LEAD) MOTORS

115-230 VOLTS AC SINGLE PHASE

Type of Operator	No. of Poles	Features	General Purpose Flush Mounting (Without Pull Box)▲							
			General Purpose Enclosure Surface Mounting NEMA Type 1		Gray Flush Plate for Cavity Mounting Only		Stainless Steel Flush Plate for Wall or Cavity Mounting		Jumbo Stainless Steel Flush Plate for Wall or Cavity Mounting‡	
			Type	Price*	Type	Price*	Type	Price*	Type	Price*

Toggle	1	With Mechanical Interlock: Standard With 2 Pilot Lights With HIGH-OFF-LOW Selector Switch: With 2 Pilot Lights	FG-11	\$25.36.	FF-11	\$24.35.			FS-101P	\$36.	FSJ-101P	\$39.
			FG-11P		FF-11P							
	2	With Mechanical Interlock: Standard With 2 Pilot Lights With HIGH-OFF-LOW Selector Switch: With 2 Pilot Lights	FG-22	27.38.	FF-22	26.37.			FS-202P	38.	FSJ-202P	41.
			FG-22P		FF-22P							

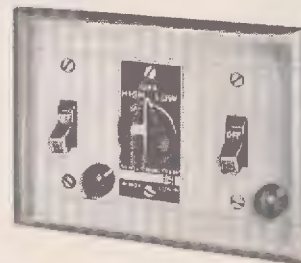
*Prices include two overload relay thermal units. Deduct \$1.50 each if thermal units are omitted.
 ‡Jumbo flush plate is recommended for difficult wall surfaces such as concrete block or tile.
 ▲Stainless steel versions fit standard 3-gang switch box. Type FF starters are not suitable for wall mounting — pull box not available.



Class
2510
Type
FG-72



Class
2512
Type
FF-22



Class
2512
Type
FS-202P



AC MANUAL STARTERS & LOOM SWITCHES

WITH MELTING ALLOY OVERLOAD RELAYS

AC MANUAL STARTERS

CLASS
2510
2511
2512

Line voltage manual starters are used where it is convenient for the operator to start and stop small single phase or polyphase motors by pressing push buttons mounted in the cover of the starter enclosure. Low voltage protection and low voltage release are not available with the manually operated mechanism. (See page 119 for dimensions.)



Class 2510
General Purpose
Enclosure with
Pilot Light Installed



Class 2510 NEMA 4
Water-tight Enclosure



Class 2510 NEMA 12
Industrial Use Enclosure



Loom Switch in
Lint-tight Enclosure

NON-REVERSING CLASS 2510 600 VOLTS MAX.

No. of Poles	NEMA Size	Ratings			General Purpose Enclosure NEMA Type 1		Water-tight (AISI #304 Stainless Steel) NEMA Type 4		Dust-tight Industrial Use Enclosure NEMA Type 12		Class T Group D or Class II Groups E, F & G NEMA Types 7 & 9		Open Type with Square Buttons†	
		Volts	Maximum Horsepower		Type	Price	Type	Price	Type	Price	Type	Price	Type	Price
			Poly-phase	Single Phase										
2	M-D	115		1	BG-1▲	\$20.	BW-11	\$52.	BA-1	\$27.	BR-1	\$66.	BO-1	\$18.
		230		2										
	M-I	115		2	CG-1▲	25.	CW-11	64.	CA-1	32.	CR-1	78.	CO-1	23.
		230		3										
3	M-D	115		3	CG-2	36.	CW-12	78.	CA-2	43.	CR-2	90.	CO-2	34.
		230		5										
	M-I	110		2	RG-2▲	25.	BW-12	57.	BA-2	32.	BR-2	71.	BO-2	23.
		208-220		3										
4	M-D	110		2	CG-3▲	30.	CW-13	69.	CA-3	37.	CR-3	83.	CO-3	28.
		208-220		7½										
	M-I	110		3	CG-4	42.	CW-14	80.	CA-4	49.	CR-4	104.	CO-4	40.
		208-220		10										

REVERSING CLASS 2511 600 VOLTS MAX.

3	M-D	208-220	3	....	BG-1	\$75.	BW-11	\$122.	...	BR-1	\$158.	BO-1	\$69.
		440-550	5	....								
	M-I	208-220	7½		CG-1	90.	CW-11	154.		CR-1	163.	CO-1	84.
		440-550	10										

TWO-SPEED ± CLASS 2512 600 VOLTS MAX.

3	M-D	208-220 440-550	3 5		BG-1	\$75.	BW-11	\$122.			BR-1	\$158.	BO-1	\$69.
		208-220	7½											
	M-I	440-550	10		CG-1	90.	CW-11	154.	....		CR-1	163.	CO-1	84.

*Class 2510 prices include one overload relay thermal unit for 2 pole starters and two thermal units for 3 and 4 pole starters. Class 2511 and 2512 prices include four thermal units. Deduct \$1.50 each if thermal units are omitted.

▲Red pilot light available in cover of these versions at \$8. additional. Order as Form P11 and specify voltage. Pilot light can also be added in the field — see Page 216 for kit listing. Third overload relay (Form J) is available on Types BG-2 and CG-3 only — \$4. additional.

±For use with separate winding, wire-connected motors only. Hp ratings listed apply for constant or variable torque motors only. Ratings for constant hp motors are 2 hp max. at 208-220 V, 3 hp max. at 440-550 V.

†Use for replacement in all enclosed devices. Open type with extended round buttons also available.

LOOM SWITCHES

Manual Starters for Textile Industry Applications

Type R and S manual starters may be group fused if all motors are rated 2 hp or less. See page 228 for maximum allowable fuse sizes. Low voltage protection and low voltage release are not provided.

TOGGLE OPERATED CLASS 2510 600 VOLTS MAX.

No. of Poles	NEMA Size	Ratings			General Purpose Enclosure NEMA Type 1			Lint-tight Enclosure NEMA Type 12		
		Volts	Max. HP		Location of Line Terminals			Location of Line Terminals		
			Poly-phase	Single Phase	Top	Bottom	* Price	Top	Bottom	* Price
2	M-0	115	1	1 1/2	RG-1	RG-4	\$ 20.	RA-1	RA-4	\$ 27.
		230	1	1 1/2	SG-1	SG-4	25.	SA-1	SA-4	32.
	M-1	115	3		SG-7	SG-8	36.			
		230	3	5	SG-7	SG-8	36.			
3	M-0	110	1 1/2	1	RG-2	RG-5	25.	RA-2	RA-5	32.
		208-220	2	1 1/2	RG-2	RG-5	25.	RA-2	RA-5	32.
	M-1	110	3	1 1/2	SG-2	SG-5	30.	SA-2	SA-5	37.
		208-220	3	1 1/2	SG-2	SG-5	30.	SA-2	SA-5	37.
4	M-0	110	2		RG-3	RG-6	35.	RA-3	RA-6	42.
		208-220	2		RG-3	RG-6	35.	RA-3	RA-6	42.
	M-1	110	5		SG-3	SG-6	42.	SA-3	SA-6	49.
		208-220	5		SG-3	SG-6	42.	SA-3	SA-6	49.

*Prices include one overload relay thermal unit for 2 pole starters and two thermal units for 3 and 4 pole starters. Deduct \$1.50 each if thermal units are omitted.

†Mounting pedestals available — #2559-C9-G2 for one starter, \$6.00; #2559-C10-G2 for two starters, \$12.00.

ORDERING INFORMATION REQUIRED

1. Class and type number of starter.
2. Quantity and type number of thermal units. Select thermal units from Table 1 on page 218.
3. Horsepower, voltage, phase, and full load current rating of motor.



AC MANUAL COMPENSATORS & DRUM SWITCHES

REVERSING DRUM SWITCHES

Class 2601 reversing drum switches may be used for across-the-line starting and the reversing of ac poly-phase, ac single phase, or dc motors. They are compact and inexpensive but ruggedly constructed.

The Type AG-3 breaks two lines to the motor; Types AG-1, AG-2 and BG-1 break three lines. These switches do not provide overload protection or low voltage protection. Maintained contact operation is standard. "Spring Return to Off" operation can be obtained by unscrewing the handle, removing the hub, and turning the shaft 180°. The hub and handle can then be replaced. (See page 119 for dimensions.)

**CLASS
2601**

600 VOLTS MAX. AC

250 VOLTS MAX. DC

NEMA Size	Internal Switching	3 Phase Wiring Diagram	Volts	Ratings			General Purpose Enclosure NEMA Type 1	
				AC Single Phase	AC Poly-Phase	DC	Type	Price
	For. Off Rev.		115 230 110 220	1 1	1 1		AG-3	\$ 11.
	For. Off Rev.		115 230 110 220 440-550	1 1/2 2	2 2 1	1/4 1/4	AG-1	11.
D-0	Rev. Off For.		115 230 110 220 440-550	1 1 1/2	1 1/2 2 2	1/4 1/4	AG-2	11.
D-1	Rev. Off For.		115 230 110 220 440-550	1 1/2 3	3 5 7 1/2	2 2	BG-1	30.

It is recommended that these drum switches be mounted in the vertical position.

ORDERING INFORMATION REQUIRED: 1. Class and type number of drum switch.
2. Horsepower, voltage and phase of motor.

AC MANUAL COMPENSATORS

Manual compensators are designed for starting ac squirrel cage motors when it is practical to have manually operated control, but where inrush currents must be reduced or starting torque limited. Reduced voltage for starting is obtained through the windings of an autotransformer.

**CLASS
2605**

**Autotransformer Type Reduced Voltage Starters — Oil-Immersed Contacts
Low Voltage Protection — Magnetic Overload Relays**

Maximum Horsepower Ratings		General Purpose Enclosure NEMA Type 1	Dust-tight Industrial Use Enclosure NEMA Type 12	Maximum Horsepower Ratings		General Purpose Enclosure NEMA Type 1	Dust-tight Industrial Use Enclosure NEMA Type 12
208-220 Volts	440-550 Volts	Price †	Price †	208-220 Volts	440-550 Volts	Price †	Price †
15	15	\$ 375.	\$ 854.	50	50	\$ 710.	\$ 1480.
25	25	393.	872.		100	429.	908.
30	30	407.	886.			765.	1535.

†Prices are for 3-pole, 50-60 cycle compensators with 2 overload relays. For 2-phase, 3- or 4-wire, or 25-40 cycle applications, or compensators with 3 overload relays, refer to nearest Square D Field Office for prices.

ORDERING INFORMATION REQUIRED: Class number, enclosure type, horsepower, voltage, phase cycles and full load current rating of motor.

**CLASS
7001**

See pages 127-133 for Class 7001 DC Magnetic Relays.



Drum Switch in General Purpose Enclosure



Wired Drum Switch with Cover Removed



Class 2605 Manual Compensator NEMA Type 1 Enclosure



Manual Compensator with Top and Front Removed



MANUAL MOTOR CONTROL

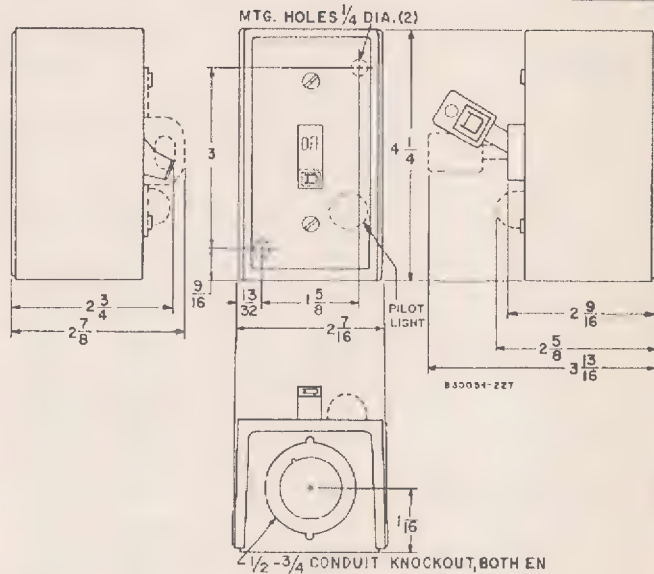
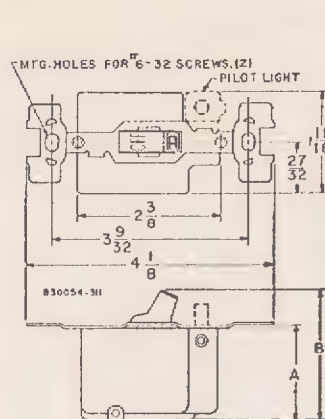
DIMENSIONS

CLASS
2510
2601

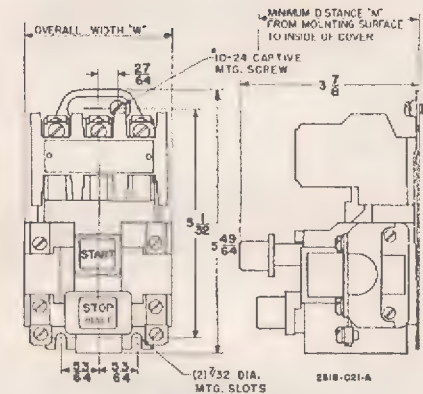
APPROXIMATE DIMENSIONS AND SHIPPING WEIGHTS

Dimension	Type FO	Type KO
"A"	17 ¹ / ₂	14 ⁵ / ₁₆
"B"	27 ¹ / ₂	21 ¹ / ₂

Class 2510, Types FO & KO
Weight — 1/2 Lb.

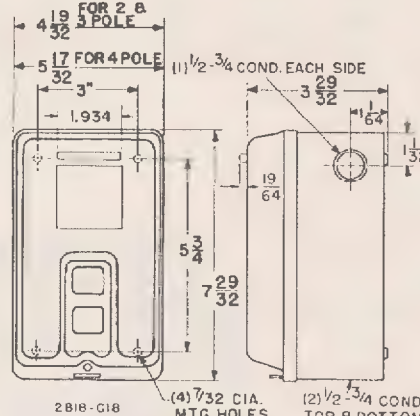


Class 2510, Types FG & KG (Single-Unit)
Weight — 1 Lb.

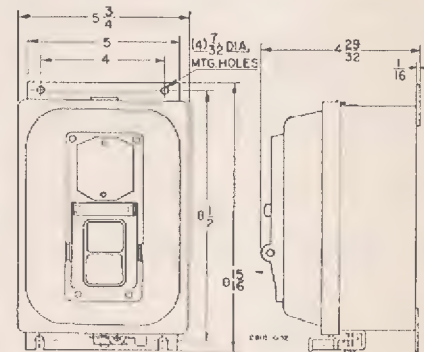


NEMA Size	Dimensions			"H"
	2 Pole	3 Pole	4 Pole	
M-0	3	3 ¹ / ₄	3 ¹ / ₂	3 ¹ / ₂
M-1	3 ¹ / ₈	3 ¹ / ₄	3 ¹ / ₂	3 ¹ / ₂
M-1P	3 ¹ / ₂	3 ¹ / ₄	3 ¹ / ₂	3 ¹ / ₂

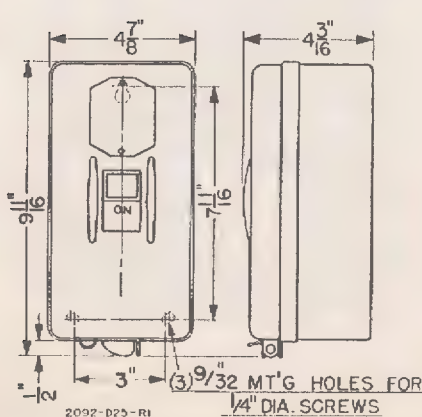
Class 2510, Types BO & CO
Weight — 3 Lbs.



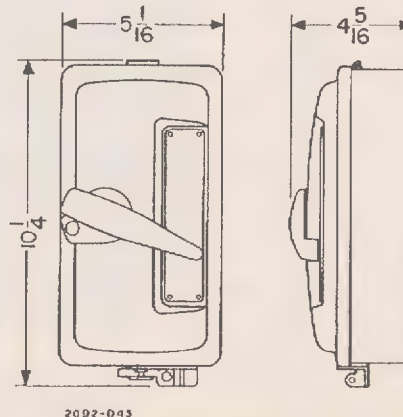
Class 2510, Types BG & CG
Weight — 5 Lbs.



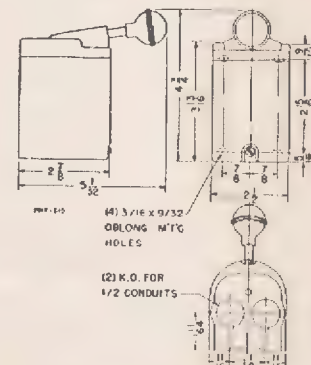
Class 2510, Types BA & CA
Weight — 6 Lbs.



Class 2510, Types RG & SG
Weight — 6 Lbs.



Class 2510, Types RA & SA
Weight — 6 Lbs.



Class 2601, Type AG
Weight — 1 1/2 Lbs.



▲Size M-1P uses 4-pole block.

THYRISTOR PUMP CONTROL

LOW VOLTAGE AND HIGH VOLTAGE

CLASS
6520
6521

Class 6520 controllers use thyristors (silicon controlled rectifiers) to adjust the primary voltage to ac low voltage induction motors. Class 6521 controllers use thyristors to adjust the secondary impedance of ac high voltage wound rotor motors. Non-reversing, stepless speed control is provided in an automatic or manual mode of operation. Sensing and sequencing controls are included as additions. Motor control center enclosures are furnished.

CLASS 6520 — LOW VOLTAGE

40° C AMBIENT		3 PHASE 60 HERTZ				CONVECTION COOLED NEMA 1 ENCLOSURE							
		Basic Single Motor Control Only				Basic Multi-Motor Control Only							
HP	Volts	For 1 Squirrel-Cage Motor★		For 1 Wound Rotor Motor▲		For 2 Squirrel-Cage Motors★		For 2 Wound Rotor Motors▲		For 3 Squirrel-Cage Motors★		For 3 Wound Rotor Motors▲	
		Type	Price	Type	Price	Type	Price	Type	Price	Type	Price	Type	Price
10	220-440 440-480	DG-11 CG-11	\$3040. 2980.	DWG-11 CWG-11	\$3310. 3240.	DG-21 CG-21	\$3930. 3880.	DWG-21 CWG-21	\$ 4500. 4420.	DG-31 CG-31	\$ 5120. 4560.	DWG-31 CWG-31	\$ 5830. 5270.
15	220-440 440-480	DG-12 DG-11	3560. 3040.	DWG-12 DWG-11	3820. 3310.	DG-22 DG-21	4970. 3930.	DWG-22 DWG-21	5510. 4500.	DG-32 DG-33	5900. 4710.	DWG-32 DWG-33	6610. 5420.
20	220-440 440-480	EG-11 DG-12	3920. 3560.	EWG-11 DWG-12	4160. 3820.	EG-21 DG-22	5540. 4970.	EWG-21 DWG-22	6080. 5510.	EG-31 DG-34	6500. 5700.	EWG-31 DWG-34	7210. 6410.
25	220-440 440-480	EG-12 DG-12	3960. 3560.	EWG-12 DWG-12	4194. 3820.	EG-21 DG-22	5540. 4970.	EWG-21 DWG-22	6080. 5510.	EG-32 DG-35	6630. 5740.	EWG-32 DWG-35	7340. 6460.
30	220-440 440-480	EG-12 EG-13	3960. 3600.	EWG-13 EWG-14	4334. 4098.	EG-22 EG-23	5660. 5070.	EWG-22 EWG-23	6530. 5940.	EG-33 EG-34	6930. 6020.	EWG-33 EWG-34	8235. 7325.
40	220-440 440-480	FG-11 EG-11	4055. 3920.	FWG-11 EWG-15	4755. 4450.	FG-21 EG-24	6140. 5540.	FWG-21 EWG-24	7374. 6774.	FG-31 EG-35	7440. 6440.	FWG-31 EWG-35	9291. 8291.
50	220-440 440-480	FG-11 EG-11	4055. 3920.	FWG-11 EWG-15	4755. 4450.	FG-21 EG-24	6140. 5540.	FWG-21 EWG-24	7374. 6774.	FG-32 EG-36	7750. 6580.	FWG-32 EWG-36	9601. 8431.
60	220-440 440-480	GG-11 FG-11	5110. 4055.	GWG-11 FWG-11	5727. 4755.	GG-21 FG-22	7500. 5940.	GWG-21 FWG-22	8734. 7174.	GG-31 FG-33	9850. 7300.	GWG-31 FWG-33	11701. 9151.
75	220-440 440-480	GG-11 FG-11	5110. 4055.	GWG-11 FWG-11	5727. 4755.	GG-21 FG-23	7500. 6090.	GWG-21 FWG-23	8734. 7324.	GG-31 FG-34	9850. 7400.	GWG-31 FWG-34	11701. 9251.
100	220-440 440-480	GG-12 FG-11	6090. 4055.	GWG-12 FWG-12	6770. 5382.	GG-22 FG-23	8700. 6090.	GWG-22 FWG-24	10720. 8110.	GG-32 FG-35	10700. 7690.	GWG-32 FWG-35	13730. 10720.
125	440-480	GG-13	5060.	GWG-13	6050.	GG-23	7360.	GWG-23	8380.	GG-33	9780.	GWG-33	12810.
150	440-480			GWG-14	6140.			GWG-24	9520.			GWG-33	12810.
200	440-480			GWG-15	7515.			GWG-25	11530.			GWG-34	14800.

★Special high slip squirrel-cage motors are required. Refer to the local Square D Company field office for prices.

▲Extra thermal capacity is required in wound rotor motors. Use motors rated at 60° C rise with Class F insulation, or rated at 40° C rise with Class B insulation. Refer to the local Square D Company field office for details.

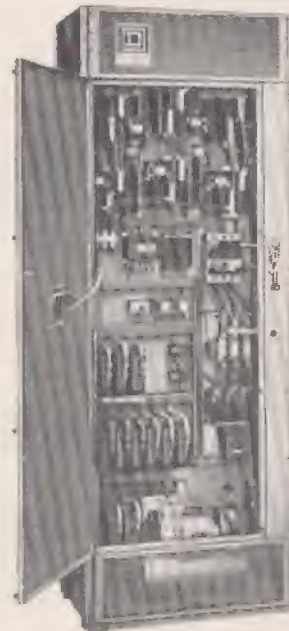
CLASS 6521 — HIGH VOLTAGE

40° C AMBIENT 3 PHASE 60 HERTZ NEMA 1 ENCLOSURE

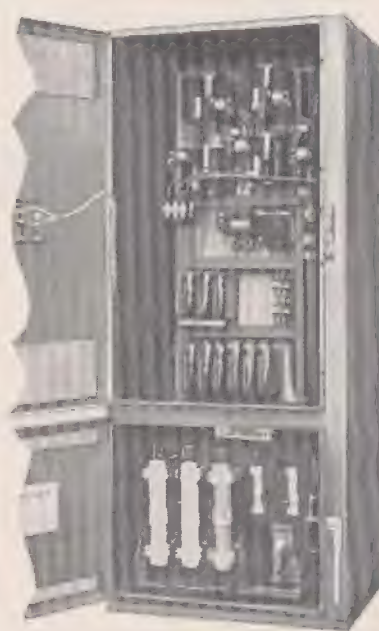
Max- imum HP	Max. Full Load Rated Rotor Current (Is Amps.)	Volts	Type	Basic Con- trol for Wound Rotor Motor▲
200	260	2200-2400 4000-4800	CRN-1 CRN-11	\$10090. 10940.
250	260	2200-2400 4000-4800	CRN-2 CRN-21	10700. 11550.
300	325	2200-2400 4000-4800	CRN-3 CRN-31	11860. 12710.
400	325	2200-2400 4000-4800	CRN-4 CRN-41	12350. 13200.
500	470	2200-2400 4000-2400	CRN-5 CRN-51	13560. 14410.
600	470	2200-2400 4000-4800	CRN-6 CRN-61	13980. 14830.
800	650	2200-2400 4000-4800	CRN-7 CRN-71	17500. 18350.
1000	920	2200-2400 4800-4800	CRN-8 CRN-81	20090. 20940.
1250	920	2200-2400 4000-4800	CRN-9 CRN-91	20525. 21375.

▲Extra thermal capacity is required in wound rotor motors. Use motors rated at 60° C rise with Class F insulation, or rated at 40° C rise with Class B insulation. Refer to the local Square D field office for details.

Maximum Motor Rotor Circuit Voltage Es Is 700 Volts.



Class 6520 Type FG-11
100 Hp., 450 V.,
Thyristor Pump Controller
with Bubbler Controls



Class 6521 Type CRN-3
300 Hp., 2300 V.,
Thyristor Pump Controller



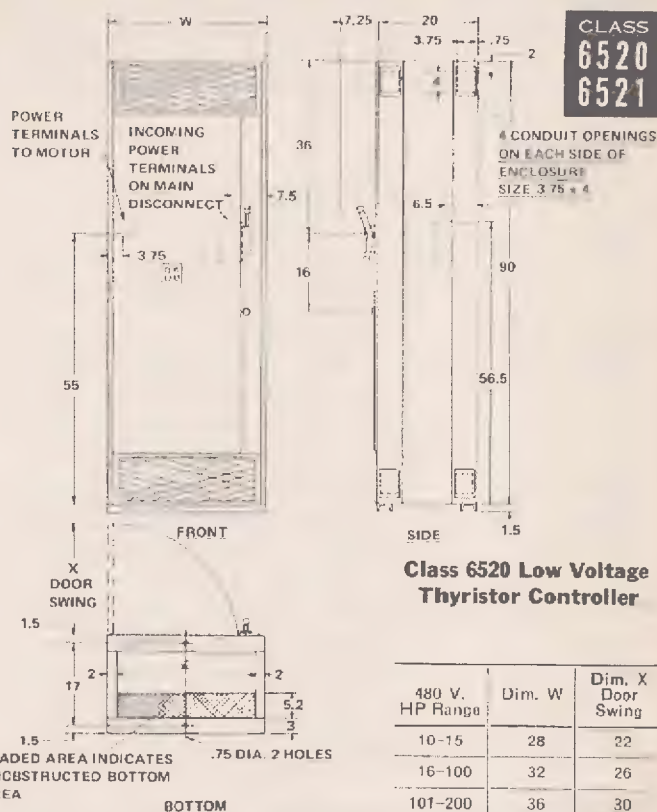
THYRISTOR PUMP CONTROL

LOW VOLTAGE AND HIGH VOLTAGE

LOW VOLTAGE AND HIGH VOLTAGE ADDITIONS AND SPECIAL FEATURES *

Item	Description	Price																							
POWER CIRCUIT MODIFICATIONS																									
1	Three phase power bus — 440 V.	\$ 200.																							
2	Ground bus	15.																							
3	Secondary resistor shorting contactor, frequently called full speed contactor. This addition permits operation at the motor nameplate rated speed, approximately 97% of synchronous speed. There will be no speed control after the contactor operates, between 90% and 94% of synchronous speed. The contactor operating speed is determined by the speed range and load requirements. This feature is not recommended for constant pressure or similar applications requiring a complete stepless speed range.																								
	<table><tr><th>Horsepower</th><th>Maximum Rated Secondary Current</th></tr><tr><td>10-25</td><td></td></tr><tr><td>26-50</td><td></td></tr><tr><td>51-100</td><td></td></tr><tr><td>101-200</td><td></td></tr><tr><td>201-250</td><td>200 amps.</td></tr><tr><td>251-500</td><td>400 amps.</td></tr><tr><td>501-1250</td><td>800 amps.</td></tr></table>	Horsepower	Maximum Rated Secondary Current	10-25		26-50		51-100		101-200		201-250	200 amps.	251-500	400 amps.	501-1250	800 amps.	<table><tr><td>210.</td></tr><tr><td>235.</td></tr><tr><td>320.</td></tr><tr><td>462.</td></tr><tr><td>331.</td></tr><tr><td>467.</td></tr><tr><td>997.</td></tr></table>	210.	235.	320.	462.	331.	467.	997.
Horsepower	Maximum Rated Secondary Current																								
10-25																									
26-50																									
51-100																									
101-200																									
201-250	200 amps.																								
251-500	400 amps.																								
501-1250	800 amps.																								
210.																									
235.																									
320.																									
462.																									
331.																									
467.																									
997.																									
4	Price deduction for omission of Class 8198 contactor.	2630.																							
CONTROL CIRCUIT MODIFICATIONS																									
5	Selector switch for manual alternation, mounted and wired on door, includes necessary relays.																								
	2 Motors.	293.																							
	3 Motors.	502.																							
6	Clock alternator circuit, 24 hour timing.																								
	2 Motors...	374.																							
	3 Motors.	464.																							
7	Extra hand-off-automatic selector switch	30.																							
8	Pilot light	27.																							
9	Control relay (4 pole)	76.																							
10	Pneumatic timing relay	100.																							
11	Motor driven timer	176.																							
METERING EQUIPMENT																									
12	Elapse time meter	100.																							
13	AC ammeter	198.																							
14	AC voltmeter	198.																							
15	Speed meter for measuring motor speed. (Requires the use of a motor mounted tachometer generator for squirrel cage motors, not included in price.)	198.																							
16	Static tachometer for speed indicating motor, used with wound rotor motor	222.																							
SENSING CONTROL EQUIPMENT																									
17	Pressure transducer and amplifier, with voltmeter read-out, provides the automatic adjustable speed control signal and sequencing control signal, and is mounted in the Thyristor Pump Controller or furnished in a separate enclosure. One required for a group of motors	515.																							
18	Sequencing control module (one required for each motor) provides automatic starting and stopping and is mounted in the Thyristor Pump Controller or furnished with a separate programming controller. A pressure transducer is required for one or more sequencing modules.	117.																							
19	Selector Switch for standby Pressure Transducer and amplifier	30.																							
BUBBLER CONTROL EQUIPMENT																									
20	Basic bubbler controls consist of the following: NEMA 1 enclosure. 1/12 hp motor and compressor, includes pressure switch and pressure gauge. Air filter, pressure regulator and gauge. Air flow regulator and indicator	980.																							
21	Level gauge, with four inch scale, mounted on door	198.																							
22	Square D Class 9012 pressure switch for remote alarm or sequencing controls	50.																							
23	Compressed air tank with 5 day air supply, automatic transfer valves, and alarm circuits for remote devices	375.																							
24	1/12 hp standby air compressor with automatic transfer valves.	370.																							

*For additional modifications, refer to Class 8198 High Voltage Motor Control -Modifications and Special Features" Section, page 124.



**Class 6520 Low Voltage
Thyristor Controller**

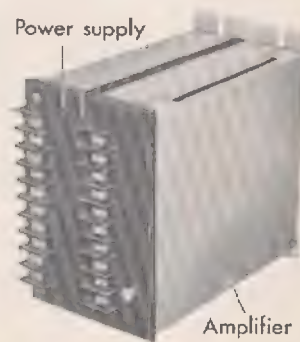
480 V. HP Range	Dim. W	Dim. X Door Swing
10-15	28	22
16-100	32	26
101-200	36	30

ORDERING INFORMATION REQUIRED

1. Specify the application such as (sewage pumping-level control, fresh water pumping-constant pressure control), etc.
2. Specify the class and type number, horsepower, volts and modifications.
3. Specify the pressures or levels at which a motor will start and stop automatically.
4. Specify the pressures or levels for maximum and minimum speed.
5. Specify the horsepower loading at maximum speed. The maximum speed will be 90% to 94% of synchronous speed, without a secondary shorting contactor.
6. Specify the horsepower loading at minimum speed.
7. Specify minimum speed.



**Class 6560
Pressure
Transducer
System**



**Class 9012
Pressure
Mechanism**

Amplifier



DC MAGNETIC CONTACTORS & STARTERS

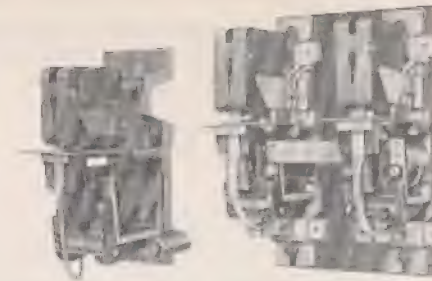
FRONT CONNECTED TYPE H

CLASS
7004

DC magnetic, mill-type, clapper contactors are especially designed for heavy industry dc drives such as cranes and mill auxiliaries. These contactors are ideally suited for the control of dc motors. The basic contactor is furnished without power lugs, electrical or mechanical interlocks. See Class 9999 for the full complement of accessories available for field installation.

600 VOLTS DC MAXIMUM

Number of Poles	NEMA Size	Open 8 Hr. Ampere Rating	Enclosed NEMA 1		Open	
			Type	Price	Type	Price
Single Pole Normally Open	1	25	HCG-1	\$ 74.	HCO-1	\$ 45.
	2	50	HDG-1	98.	HDO-1	56.
	3	100	HEG-1	144.	HEO-1	94.
	4	150	HFG-1	180.	HFO-1	114.
	5	300	HGG-1	256.	HGO-1	154.
Double Pole Normally Open	1	25	HCG-2	96.	HCO-2	72.
	2	50	HDG-2	132.	HDO-2	98.
	3	100	HEG-2	242.	HEO-2	207.
	4	150	HFG-2	284.	HFO-2	247.
	5	300	HGG-2	436.	HGO-2	332.
Single Pole Normally Closed	1	25	HCG-3	116.	HCO-3	90.
	2	50	HDG-3	136.	HDO-3	94.
	3	100	HEG-3	190.	HEO-3	128.
	4	150	HFG-3	230.	HFO-3	156.
	5	300	HGG-3	338.	HGO-3	234.



25 Amp. Normally Open Single Pole Contactor.

100 Amp. Normally Open Double Pole Contactor.

FACTORY INSTALLED MODIFICATIONS▲▲

Total Number of Factory Installed Control Circuit Contacts

Form Number	N.O.	N.C.	Price Addition	Form Number	N.O.	N.C.	Price Addition
X-10	1	0	\$ 9.	X-43	4	3	\$45.
X-11	1	1	12.	X-44	4	4	48.
X-01	0	1	9.	X-34	3	4	45.
X-20	2	0	18.	X-24	2	4	42.
X-21	2	1	21.	X-14	1	4	39.
X-22	2	2	24.	X-04	0	4	36.
X-12	1	2	21.	Form Number	Factory Installed Pneumatic Timer		Price Addition
X-02	0	2	18.				
X-30	3	0	27.	K2E K2D	On-Delay Off-Delay			$37. 37.
X-31	3	1	30.	Form Number	Special Contact Facing Material (Main Contacts)		Price Addition
X-32	3	2	33.				
X-33	3	3	36.				
X-23	2	3	33.				
X-13	1	3	30.				
X-03	0	3	27.				
X-40	4	0	36.				
X-41	4	1	39.				
X-42	4	2	42.	Y78-1 Y78-2	Silver Silver Elkonite			On Request

▲▲For maximum number of accessories and accessory combinations see catalog.

ORDERING INFORMATION REQUIRED 1—Class 2—Type 3—Form 4—Voltage

CLASS
7135
7136
7735
7736

DC MAGNETIC STARTERS

TIME LIMIT ACCELERATION TYPE

Class 7135, 7136 (non-reversing) and 7735, 7736 (reversing) dc reduced voltage starters are used to accelerate shunt and compound wound dc motors. Motor overload protection is provided by melting alloy type thermal overload relays. All starters include a N.O. holding circuit interlock as standard. Type H Contactor used through NEMA size 4.

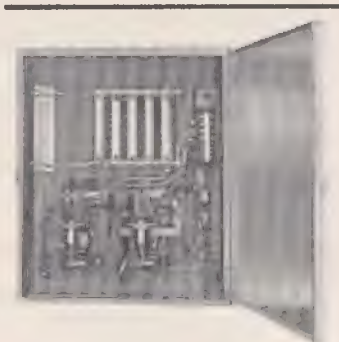
230 VOLTS DC▲

NEMA TYPE 1 ENCLOSURE▲

Max. HP	NEMA Size	No. Accol. Pts.	Non-Reversing Without Dynamic Braking★				Reversing With Dynamic Braking			
			Class 7135 Constant Speed		Class 7136 Adjustable Speed		Class 7735 Constant Speed		Class 7736 Adjustable Speed	
			Type	Price	Type	Price	Type	Price	Type	Price
3	1	2	HCG-1	\$314.	HCG-1	\$505.	HCG-1	\$818.	HCG-1	\$1009.
5	1	2	HCG-1	317.	HCG-1	508.	HCG-1	821.	HCG-1	1012.
10	2	3	HDG-1	498.	HDG-1	689.	HDG-1	1052.	HDG-1	1243.
15	3	3	HEG-1	593.	HEG-1	784.	HEG-1	1203.	HEG-1	1394.
20	3	3	HEG-1	596.	HEG-1	787.	HEG-1	1295.	HEG-1	1486.
25	3	3	HEG-1	605.	HEG-1	796.	HEG-1	1308.	HEG-1	1499.
30	4	3	HFG-1	826.	HFG-1	1052.	HFG-1	1655.	HFG-1	1946.
40	4	3	HFG-1	854.	HFG-1	1061.	HFG-1	1695.	HFG-1	1986.

▲For different voltages, type of enclosures, and other features, contact factory.

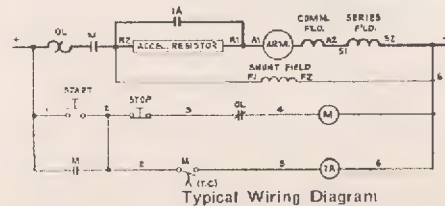
★Add Form VI to type number when dynamic braking is required. Consult factory for price addition.



Class 7135 Type HCG-1

ORDERING INFORMATION REQUIRED

1. Class, Type, and Form Number.
2. Horsepower, Voltage, Full Load Current.
3. For 7136 and 7736 starter, specify shunt field resistance, maximum and minimum field current.



Typical Wiring Diagram



HIGH VOLTAGE MOTOR CONTROL

AIR BREAK • 5000 VOLT MAXIMUM • WITH CURRENT LIMITING FUSES (NEMA E2)

SQUIRREL CAGE MOTOR STARTERS

CLASS
8198

FULL VOLTAGE, NON-REVERSING STARTERS

NEMA 1 ENCLOSURE

2200 — 2400 VOLTS — 60 HERTZ							4000 — 4800 VOLTS — 60 HERTZ						
Wall Mtd. w/ Pull Box			Motor Control Center Construction				Wall Mtd. w/ Pull Box			Motor Control Center Construction			
Max. HP	Type	Price	Type	Space Factor	Installed Unit Price ★	Separate Unit Price ▲	Max. HP	Type	Price	Type	Space Factor	Installed Unit Price ★	Separate Unit Price ▲
200 400 700 1000 1500	CFNG-1	\$ 3300. 3400. 3600. 4750. 5350.	CFN-1	1	\$ 3200. 3300. 3500. 4650. 5250.	\$ 2850. 2950. 3150. 4300. 4900.	1250 2500	CFNG-1	\$ 4750. 5950.	CFN-1	1	\$ 4650. 5850.	\$ 4300. 5500.

PRIMARY REACTOR, REDUCED VOLTAGE, NON-REVERSING STARTERS

NEMA 1 ENCLOSURE

2200 — 2400 VOLTS — 60 HERTZ					4000 — 4800 VOLTS — 60 HERTZ				
Motor Control Center Construction					Motor Control Center Construction				
Max. HP	Type	Space Factor ‡	Installed Unit Price ★	Separate Unit Price	Max. HP	Type	Space Factor ‡	Installed Unit Price ★	Separate Unit Price
50 75 100 125 150	CRN-1	3	\$ 7700. 7800. 7800. 7900. 8100.	Not Available	50 75 100 125 150	CRN-1	3	\$ 8750. 8750. 8950. 8950. 9150.	Not Available
200 300 400 500 600			8300. 8600. 8800. 9000. 9200.		200 300 400 500 600			9450. 9450. 9950. 10250. 10250.	
700 800 900 1000 1250			9400. 10650. 10650. 10650. 12350.		700 800 900 1000 1250			10950. 11150. 11850. 11850. 12450.	
1500			12550.		1500 1750 2000 2250 2500			14350. 14850. 15350. 15950. 16450.	

SYNCHRONOUS MOTOR STARTERS

FULL VOLTAGE, NON-REVERSING STARTERS

NEMA 1 ENCLOSURE

2200 — 2400 VOLTS — 60 HERTZ						4000 — 4800 VOLTS — 60 HERTZ					
Max. HP		Motor Control Center Construction				Max. HP		Motor Control Center Construction			
1.0PF	0.8PF	Type	Space Factor ‡	Installed Unit Price ★	Separate Unit Price ▲	1.0PF	0.8PF	Type	Space Factor ‡	Installed Unit Price ★	Separate Unit Price ▲
250 500 700	200 250 400 900	SFN-1	2	\$ 5900. 6020. 6120. 6200.	\$ 5550. 5670. 5770. 5850.	250 800 900 1250	250 700 700 1000	SFN-1	2	\$ 6750. 6850. 6850. 6850.	\$ 6400. 6500. 6500. 6500.
1250 1500 1750	1000 1250 1500			6850. 7450. 7750.	6500. 7100. 7400.	1500 1750 3000	1250 1500 2500			6850. 8350. 8450.	6500. 8000. 8100.

‡ All spaces must be available as adjacent spaces in the same vertical section.

★ Does not include charge for vertical sections. Single vertical section has 3 space units and is priced at \$300. See "Sample of Pricing" on page 124. If no starters are included in a vertical section, minimum charge is \$910.

▲ Space in framework must have provisions for unit. If space is unprepared refer to Modification Table (item 22) for necessary kit of parts.

CURRENT LIMITING FUSE INTERRUPTING CAPACITY

Volts	† Interrupting Rating for 3 Phase, 60 Hertz
2200-2400	150,000 KVA (symmetrical)
4000-4800	250,000 KVA (symmetrical)

† Fuses rated at 210 MVA (2400 volts) and 415 MVA are optionally available to meet higher fault capacities.



HIGH VOLTAGE MOTOR CONTROL

AIR BREAK • 5000 VOLT MAXIMUM • WITH CURRENT LIMITING FUSES (NEMA E2)

CLASS
8198

CONTROL CENTER CONSTRUCTION

SAMPLE OF PRICING

Unit No.	Description	Price Breakdown	Price
1A	Space for future Type CFN-1 Modification Item 21		\$ 350.
1B	Type CFN-1 (400 HP 2300 volts)	\$ 3300.	
	Ammeter (Modification Item 5)	198.	
	Voltmeter (Modification Item 7)	198.	
	Start-Stop pushbutton (Modification Item 1)	N/C	
	2 Indicating lights (Modification Item 3)	60.	
			3756.
1C	Same as Unit 1B.		3756.
2A	Same as Unit 1A.		350.
2B	Same as Unit 1B.		3756.
2C	Same as Unit 1B.		3756.
	2 Vertical Sections @ \$300.		600.
	2 1000 Amp. Power Bus. Sections @ \$330. Modification Item 17)		660.
	Total List Price of Control Center		\$ 16,984

Each vertical section (90" h. x 37" w. x 34" d.) will accommodate any of the following equipment arrangements.

3 Full Voltage Starters for squirrel cage motors.

1 Reduced Voltage Starter for squirrel cage motor.

1 Synchronous and 1 Squirrel cage Starter (both full voltage).



MODIFICATIONS AND SPECIAL FEATURES

Item No.	Description	Space Factor ‡	Price	Item No.	Description	Space Factor ‡	Price
1	PILOT DEVICES MOUNTED IN DOOR			21	POWER CIRCUIT MODIFICATIONS (Continued)		
2	Start-Stop push button ♦	2PB	No Charge		Preparation of empty compartment to make it suitable for future mounting of full voltage non-reversing starter.		\$ 350.
3	Hand-Off-Auto selector Switch ♦	1PB	No Charge	22	Kit of parts for making empty compartment suitable for mounting a full voltage non-reversing starter.		350.
4	Indicating Light (specify color)	1PB	\$ 30.				
	Other push button units: price per operator	1PB	30.	23	CONTROL CIRCUIT MODIFICATIONS		
5	METERING EQUIPMENT				Third overload relay and necessary current transformer.	1CT	186.
6	AC Ammeter	1M	198.	24	NO contact on overload relay (Per starter). Not available on magnetic overloads.	None	25.
7	Ammeter transfer switch	1MS	102.	25	Additional two NO and one NC for customer use	None	No Charge
	AC Voltmeter (connected to control transformer)	1M	198.	26	Maximum of four NO and four NC for customer use	None	64.
8	Potential transformer	AUX	288.	27	Control relay 4 pole	1PS	76.
9	2200-2400 volts 60 hertz	AUX	388.	28	Control relay 8 pole	1PS	116.
10	4000-4800 volts 60 hertz	1MS	102.	29	Mechanically latched control relay, 4 pole maximum	1PS	90.
11	† Voltmeter transfer switch			30	Pneumatic timer	1PS	100.
	† Combination ammeter and voltmeter transfer switch	1MS	204.	31	Motor driven timer	2PS	176.
12	† Watthour meter (drawout type)	1WHM	420.	32	Time delay under voltage circuit	1PS	No Charge
13	† Wattmeter	1M	400.	34	Mounting and wiring of exciter field rheostat (limited to a maximum of one 13" plate)	1RH	50.
14	† Power factor meter	1M	400.		ACCESSORY EQUIPMENT		
15	† Varimeter	1M	400.	81	Class 8198 Type HJ-1 contactor jack for removing and transporting contactor		256.
16	Current transformer	1CT	166.				
	POWER CIRCUIT MODIFICATIONS						
17	Power bus						
	1000 ampere (per vertical section)	None	330.				
18	2000 ampere (per vertical section)	None	570.				
19	Ground bus (per vertical section)	None	57.				
20	Spare fuses, each						
	Max. HP at: 2300V 4800V Fuse Size						
	200 400 2R, 3R or 4R		53.				
	500 1000 6R or 9R		124.				
	700 1200 12R		160.				
	800 1500 18R		253.				
	1600 2500 24R		294.				

† When any of these modifications are requested 2 potential transformers (Item 8) must also be included.

♦ When both Item No. 1 and No. 2 are required, Item No. 2 must be priced at \$30.

‡ The number of Modifications is limited by the mounting space available on the door-panel or in each section. Send sketch of section and modifications desired for recommendation on maximum number that can be supplied with each starter.

ORDERING INFORMATION REQUIRED

- Specify class and type number of each starter.
- For Control Center construction, supply arrangement sketch of each vertical section.
- If starter is for installation in existing Control Center vertical section, supply nameplate data of same.
- Supply basic facts for each starter: motor nameplate data, field data (for synchronous motors) and list modifications and special features from table above.

WALL MOUNTING STARTERS

30" High
37" Wide
34" Deep



For applications which require only a single full voltage squirrel cage motor starter a Class 8198 Type CFNG-1 starter can be supplied. A separate pull box is provided for convenience during installation.



TYPE K — GENERAL PURPOSE RELAYS

150 VOLT, AC or DC — 2 or 3 POLE DOUBLE THROW

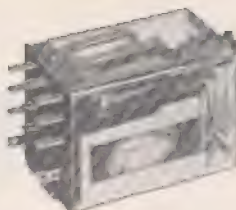
COMBINATION TERMINAL TYPE

TYPE K General Purpose Relays are designed for multi-pole switching applications at 150 volts maximum. THE COMBINATION TERMINAL TYPE offers the maximum in mounting and wiring versatility while the TUBE TYPE (see page 126) features a universal mounting and wiring arrangement.

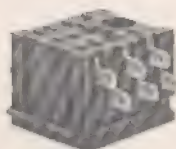
8501



Type KT and KTD



Type KS and KSD



Type NK3



Type KR and KRD



Type NK3T

WIRING DIAGRAM



CONTACTS — 10 AMP. RESISTIVE, 150 VOLTS MAX.

			Direct Panel Mounting				Socket Mounting	
			Open		Dust Cover Enclosed		Dust Cover Enclosed	
Coil	Wiring Method	Poles	Type	Price *	Type	Price *	Type	Price *
AC (240 V. max.) 50/60 Hz.	Solder or .110 x .032 Slip-on Connector	2 PDT	KR12	\$5.20	KT12	\$5.60	KS12	\$5.60
		3 PDT	KR13	5.75	KT13	6.30	KS13	6.30
DC (110 V max.)	Solder or .110 x .032 Slip-on Connector	2 PDT	KRD12	5.20	KTD12	5.60	KSD12	5.60
		3 PDT	KRD13	5.75	KTD13	6.30	KSD13	6.30

†220 volt operation possible by using 5W, 6,800 ohm wire-wound resistor in series with 110 volt coil

*Prices listed apply to maximum coil voltages of 120 volts ac and 24 volts dc. Above 120 volts ac add \$0.50. Above 24 volts dc add \$0.65.

SOCKETS — 10 AMPERES

Wiring Method	Mounting Method	Poles	Type	Price
Solder	Front Panel	2	NK32	\$1.75
		3	NK3	3.00
or .187 x .020 Slip-on Connector	Track‡	2	NK32T	1.95
		3	NK3T	3.20

SPECIAL FEATURES

Feature	Function	Form	Additions Price
Pilot Light	Indicates Power to Coil	P14	\$1.20
Manual Operator	Manual Closing of Contacts	M1	0.25

‡Select track and terminal blocks from Class 9080 section.

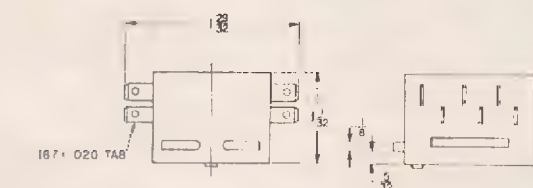
ⓈConsists of NK32 or NK3 socket plus snap-on track adaptor. Order adaptor only as Class 8501 Type NT at \$0.20 each. Minimum order Qty. 10.

CONTACT RATING — ALL TYPE K RELAYS

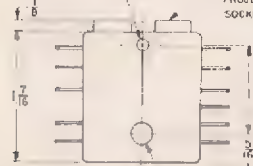
AC Volts	AC Amperes				DC Volts	DC Amperes	
	Inductive Pilot Duty — 35% P.F.			Resistive 75% — P.F.		Inductive Pilot Duty▲	
	Make	Break	Con- tinuous	Make, Break & Continuous		Make Break	Con- tinuous
0-120	30	3	10	10	24-120	60 VA	10 Amps.

▲Based on inductive loads such as coils and solenoids.

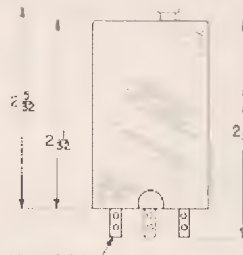
APPROXIMATE DIMENSIONS



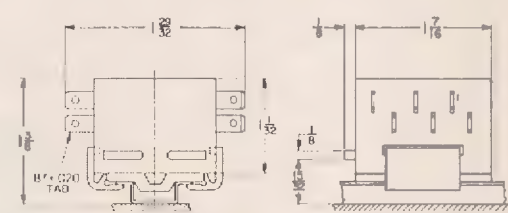
PROJECTION TO MATE WITH ADDITIONAL SOCKETS ON TERMINAL BLOCKS



Type NK32 and NK3 — Without Track Adapter



Type KS and KSD



Type NK32T and NK3T With Track Adapter

ORDERING INFORMATION REQUIRED

1. Class and type number.
2. Coil voltage and whether ac or dc.
3. Form designation of any special feature desired.



AC & DC GENERAL PURPOSE RELAYS—TYPE K

150 VOLT, AC or DC — 2 or 3 POLE DOUBLE THROW

TUBE TYPE

CLASS 8501 TYPE K TUBE TYPE relays feature an industry standard wiring and pin arrangement. The basic relay is the same as the TYPE KS, combination terminal device (page 125) with the exception of termination.

CONTACTS — 10 AMPS. RESISTIVE, 150 VOLTS MAX.

Coil	Mounting Method	Termination	Poles	Dust Cover Enclosed	
				Type	Price†
AC (240 V. max.) 50/60 Hz.	Socket	8 Pin	2 PDT	KP12	\$ 8.20
		11 Pin	3 PDT	KP13	10.25
DC (110 V. max.) ▲	Socket	8 Pin	2 PDT	KPD12	8.20
		11 Pin	3 PDT	KPD13	10.25

▲220 volt operation possible by using 5W, 6,800 ohm wire-wound resistor in series with 110 volt coil.

†Prices listed apply to maximum coil voltages of 120 volts ac and 24 volts dc. Above 120 volts ac add \$0.50. Above 24 volts dc add \$0.55.

SOCKETS

Termination	Mounting	Amp. Rating	Pins	Poles	Type	Price
Screw	Front or Back Panel	5	8	2 PDT	NR10	\$1.75
		10	11	3 PDT	NR20	4.05
Solder	Front Panel	3	8	2 PDT	NR30	.25
		3	11	3 PDT	NR40	.35

① Amphenol Type 146-103

② Amphenol Type 146-817

③ Amphenol Type 77-M1P-8, minimum order qty. — 10

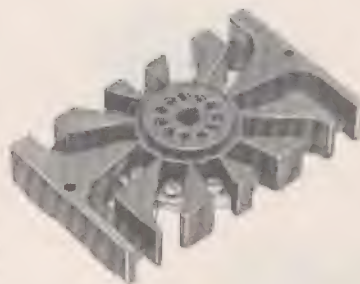
④ Amphenol Type 77-M1P-11, minimum order qty. — 10



Type NR1



Type KP and KPD



Type NR2



Type NR3, NR4

ORDERING INFORMATION REQUIRED

1. Class and type number.
2. Coil voltage and whether ac or dc.
3. Specify Form P14 for addition of pilot light.

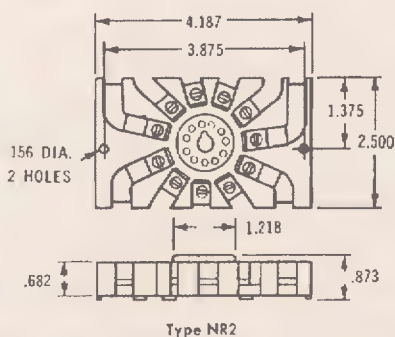
CONTACT RATINGS

Refer to Page 125

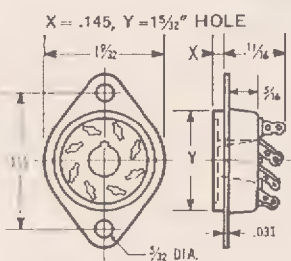
SPECIAL FEATURES

Feature	Function	Form	Additions Price
Pilot Light	Indicates Power to Coil	P14	\$ 1.20
Manual Operator	Manual Closing of Contacts	M1	0.25

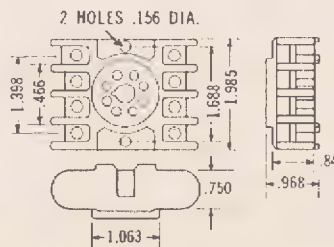
APPROXIMATE DIMENSIONS



Type NR2



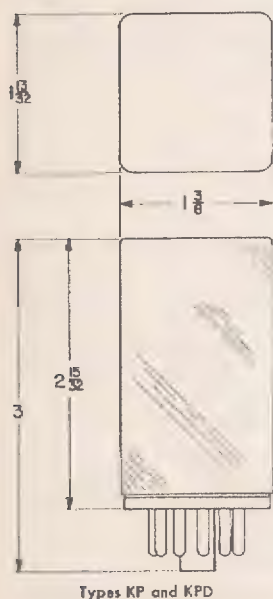
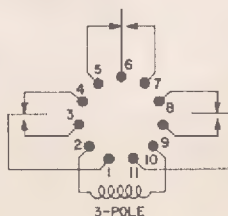
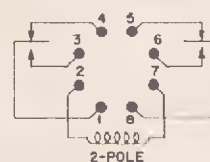
Type NR3 and NR4



Type NR1

WIRING DIAGRAM

Type KP and KPD



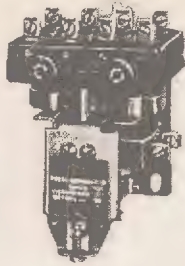
Types KP and KPD



CONTROL RELAYS

CLASS
7001
8501

The Class 8501 Type A and BH and Class 7001 Type Q and R control relays feature contact reliability, convenient accessibility along with easy contact convertibility. Type C relays are small general purpose types. For separate NEMA 1 enclosures, see Page 210.



Type AO-40



Type BHO-40



Type CO-1



Type CO-2

CLASS 8501 TYPE A — AC RELAY

25-60 HERTZ			10 Ampere		6-600 Volts	
No. of Poles	No. of Poles N. O.	No. of Poles N. C.	General Purpose Enclosure NEMA Type 1		Open Type	
			Type	Price	Type	Price
2	2	0	AG-20	\$ 18.	AO-20	\$ 15.
	1	1	AG-11	21.	AO-11	18.
	0	2	AG-02	21.	AO-02	18.
3	3	0	AG-30	21.	AO-30	18.
	2	1	AG-21	24.	AO-21	21.
	1	2	AG-12	24.	AO-12	21.
4	4	0	AG-40	24.	AO-03	21.
	3	1	AG-31	26.	AO-40	20.
	2	2	AG-22	26.	AO-31	23.
6	6	0	AG-60	33.	AO-22	23.
	5	1	AG-51	36.	AO-13	23.
	4	2	AG-42	36.	AO-04	23.
6	3	3	AG-33	36.	AO-60	30.
	2	4	AG-24	36.	AO-51	33.
	1	5	AG-15	38.	AO-42	33.
	0	6	AG-06	38.	AO-33	33.
6	3	3	AG-33	36.	AO-24	32.
	2	4	AG-24	36.	AO-33	33.
	1	5	AG-15	38.	AO-42	33.
	0	6	AG-06	38.	AO-51	35.

CLASS 7001 TYPE Q — DC RELAY

6-250 Volt Dc Coils			Contacts — 600 Volts Max.			
No. of Poles	No. of Poles N.O.	No. of Poles N.C.	General Purpose Enclosure NEMA Type 1		Open Type	
			Type	Price	Type	Price
2	2	0	QG-20	\$ 29.	QO-20	\$ 26.
3	3	0	QG-30	33.	QO-30	30.
4	4	0	QG-40	35.	QO-40	32.
6	6	0	QG-60	48.	QO-60	45.

CLASS 8501 TYPE BH — AC RELAY

25-60 HERTZ			15 Ampere		6-600 Volts	
No. of Poles	No. of Poles Norm. Open	No. of Poles Norm. Closed	General Purpose Enclosure NEMA Type 1		Open Type	
			Type	Price	Type	Price
2	2	0	BHG-20	\$ 24.	BHO-20	\$ 21.
	1	1	BHG-11	27.	BHO-11	24.
	0	2	BHG-02	27.	BHO-02	24.
3	3	0	BHG-30	\$ 27.	BHO-30	\$ 24.
	2	1	BHG-21	30.	BHO-21	27.
	1	2	BHG-12	30.	BHO-12	27.
	0	3	BHG-03	30.	BHO-03	27.
4	4	0	BHG-40	\$ 29.	BHO-40	\$ 26.
	3	1	BHG-31	32.	BHO-31	29.
	2	2	BHG-22	32.	BHO-22	29.
	1	3	BHG-13	32.	BHO-13	29.
	0	4	BHG-04	32.	BHO-04	29.
5	5	0	BHG-50	\$ 38.	BHO-50	\$ 35.
	4	1	BHG-41	41.	BHO-41	38.
	3	2	BHG-32	41.	BHO-32	38.
	2	3	BHG-23	41.	BHO-23	38.
	1	4	BHG-14	41.	BHO-14	38.
	0	5	BHG-05	43.	BHO-05	40.
6	6	0	BHG-60	\$ 43.	BHO-60	\$ 40.
	5	1	BHG-51	46.	BHO-51	43.
	4	2	BHG-42	46.	BHO-42	43.
	3	3	BHG-33	46.	BHO-33	43.
	2	4	BHG-24	46.	BHO-24	43.
	1	5	BHG-15	48.	BHO-15	45.
	0	6	BHG-06	48.	BHO-06	45.
8	8	0	BHG-80	\$ 49.	BHO-80	\$ 46.
	7	1	BHG-71	52.	BHO-71	49.
	6	2	BHG-62	52.	BHO-62	49.
	5	3	BHG-53	52.	BHO-53	49.
	4	4	BHG-44	52.	BHO-44	49.
	3	5	BHG-35	54.	BHO-35	51.
	2	6	BHG-26	54.	BHO-26	51.
	1	7	BHG-17	54.	BHO-17	51.
	0	8	BHG-08	54.	BHO-08	51.

† Class 7001 Type R dc relay also available.

CLASS 8501 TYPE C — AC RELAY

25-60 HERTZ		SINGLE AND DOUBLE POLE						*COIL — 480 VOLTS MAX.		
No. of Poles Normally Open	No. of Poles Normally Closed	Max. Contact Volts	Ampere Rating ‡	AC Pilot Duty VA†	Maximum Single Phase Horsepower		General Purpose Enclosure NEMA Type 1		Open Type	
					115 V.	230 V.	Type	Price	Type	Price
1	0	277	15	690	1	1½	CG-1	\$ 8.00	CO-1	\$ 5.50
2	0	277	10	345	½	¾	CG-2	11.00	CO-2	8.50
1	1	277	10				CG-3	12.50	CO-3	10.00
0	2	600	5				CG-4	12.50	CO-4	10.00
0	1	277	15	690	¾	1	CG-5	8.50	CO-5	6.00
1	0	277	10	690	½	¾	CG-11	9.50	CO-11	7.00
1	1	277	10	690	½	¾	CG-12	11.00	CO-12	8.50
1	0	277	10	690	½	¾	CG-13	10.00	CO-13	7.50
		600	5							
1	1	277	10	690	½	¾	CG-14	11.50	CO-14	9.00
		600	5							

*300 volts maximum on 25 Hertz.

‡ The ac continuous ampere rating is based on a 75% power factor.

† The ac pilot duty va rating is based on a 35% power factor. Maximum current from 0 to 115 volts for 690 va rated devices is 6 amps. break and 60 amps. make and for 345 va rated devices is 3 amps. break and 30 amps. make.

ORDERING INFORMATION REQUIRED: Specify class and type number of relay. Give voltage and frequency of operating coil.



CONTROL RELAYS—TYPE D

CLASS
7001
8501

Class 8501 Type D compact machine tool relays are available with from 2 to 10 contacts in the combinations listed below. This line of long life relays has tilted terminals with pressure wire connectors for ease of wiring. The relay can be disassembled quickly and easily for maintenance by loosening only two screws. (See page 133 for dimensions.)

CLASS 8501 — TYPE D — AC RELAY

50-60 HERTZ

10 AMPERES

600 VOLTS MAX.

Description	* No. of Contacts Normally Open	* No. of Contacts Normally Closed	Open Type		General Purpose Enclosure NEMA Type 1		Water-Tight Enclosure NEMA Type 4		Class I, Group D Class II, Groups E, F and G NEMA Types 7 & 9	
			Type	Price	Type	Price	Type	Price	Type	Price
2 Pole, Single Throw	2	0	DO-20	\$ 13.00	DG-20	\$ 16.00	DW-20	\$ 33.00	DR-20	\$ 69.00
2 Pole, Single Throw	0	2	DO-02	16.00	DG-02	19.00	DW-02	36.00	DR-02	72.00
2 Pole, Double Throw	2	2	DO-22	16.00	DG-22	21.00	DW-22	54.00	DR-22	74.00
4 Pole, Single Throw	4	0	DO-40	17.00	DG-40	20.00	DW-40	53.00	DR-40	73.00
4 Pole, 2 Double Throw	4	2	DO-42	23.50	DG-42	27.00	DW-42	60.00	DR-42	80.00
8 Pole	4	4	DO-44	23.50	DG-44	27.00	DW-44	60.00	DR-44	80.00
6 Pole	6	0	DO-60	25.00	DG-60	28.00	DW-60	61.00	DR-60	81.00
8 Pole	6	2	DO-62	33.00	DG-62	36.00	DW-62	69.00	DR-62	89.00
8 Pole, 2 Double Throw	6	4	DO-64	35.00	DG-64	38.00	DW-64	71.00	DR-64	91.00
8 Pole	8	0	DO-80	30.00	DG-80	33.00	DW-80	66.00	DR-80	86.00
8 Pole, 2 Double Throw	8	2	DO-82	41.00	DG-82	44.00	DW-82	77.00	DR-82	97.00

For separate NEMA 1 enclosures, see Page 210.

CLASS 7001 — TYPE D — DC RELAY

COILS — 6-250 VOLTS DC

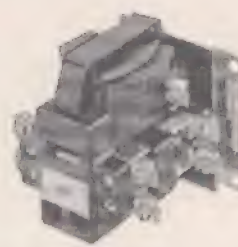
CONTACTS — 600 VOLTS MAX.

Description	Number of Contacts*		Open Type		General Purpose Enclosure NEMA Type 1	
	Normally Open	Normally Closed	Type	Price	Type	Price
2 Pole, Single Throw	2	0	DO-20	\$ 18.	DG-20	\$ 21.
2 Pole, Single Throw	0	2	DO-02	21.	DG-02	24.
2 Pole, Double Throw	2	2	DO-22	23.	DG-22	26.
4 Pole, Single Throw	4	0	DO-40	22.	DG-40	25.
4 Pole, 2 Double Throw	4	2	DO-42	30.	DG-42	33.
8 Pole	4	4	DO-44	30.	DG-44	33.
6 Pole	6	0	DO-60	32.	DG-60	35.
8 Pole	6	2	DO-62	40.	DG-62	43.
8 Pole, 2 Double Throw	6	4	DO-64	42.	DG-64	45.
8 Pole	8	0	DO-80	37.	DG-80	40.
8 Pole, 2 Double Throw	8	2	DO-82	48.	DG-82	51.

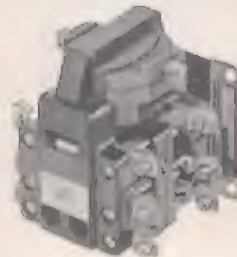
For separate NEMA 1 enclosures, see Page 210.

ELECTRICAL CONTACT RATINGS

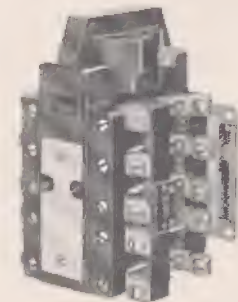
AC RATINGS						DC RATINGS					
Inductive Pilot Duty 35% Power Factor						Resistive 75°C Power Factor		Inductive Pilot Duty		Resistive	
Volts	Make Amps.	Break VA	Amps.	VA	Con- tinuous Amps.	Make, Break & Con- tinuous Amps.	Resistive 75°C Power Factor	Make and Break Amps.	Con- tinuous Amps.	Make and Break Amps.	Con- tinuous Amps.
120	60	7200	6	720	10	10	1.1	10	6	10	10
240	30	7200	3	720	10	10	0.55	10	1	10	10
480	15	7200	1.5	720	10	10		10			
600	12	7200	1.2	720	10	10	0.2	10	0.5	10	10



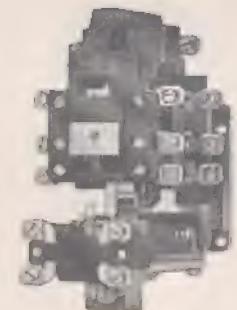
Class 8501,
Type DO-22



Class 8501,
Type DO-42



Class 8501,
Type DO-82



Class 8501,
Type DEO-42

CLASS 8501 — TYPE D — AC RELAY OPERATED TIMER

50-60 HERTZ

600 VOLTS MAX.

Description	* Number of Instantaneous Contacts		* Number of Timed Contacts		Open Type		General Purpose Enclosure NEMA Type 1	
	N.O.	N.C.	N.O.	N.C.	Type	Price	Type	Price
Time Delay after De-energization (Off Delay)	2	2	1	1	DDO-22	\$ 60.	DDG-22	\$ 70.
	4	2	1	1	DDO-42	70.	DDG-42	80.
Time Delay after Ener-gization (On-Delay)	2	2	1	1	DEO-22	60.	DEG-22	70.
	4	2	1	1	DEO-42	70.	DEG-42	80.

*Double throw contacts must be used on same polarity.

†The timing range is adjustable from 0.2 seconds to one minute.

ORDERING INFORMATION REQUIRED — 1 Specify class and type number of relay and voltage and frequency of operating coil.



TYPE F & P—CONTROL RELAYS

TYPE F — TWO POLE DOUBLE THROW

A variety of mounting and wiring styles, an internal pilot light, exceptionally long life, and excellent contact reliability make this relay ideally suited for all control systems (See Page 133 for dimensions).

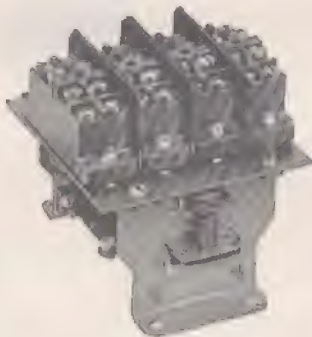
CLASS
7001
8501



Types FO and FDO
With Pressure
Wire Connectors



Types FPG and FPDO
Plug-In



Type PO-8

50-50 HERTZ or DC

MAX. CONTACT RATING 277 VOLTS AC — 250 VOLTS DC ‡

Description			AC CLASS 8501		DC CLASS 8501	
No. of Poles	Type of Wire Termination	With Pilot Light	Type	Price	Type	Price
2 Pole Double Throw	Pressure Wire Connectors	No Yes	FO-22 FO-22P	\$ 12.00 13.50	FDO-22 FDO-22P	\$ 12.00 13.50
	Binder Head Screws	No Yes	FBO-22 FBO-22P	12.00 13.50	FBDO-22 FBDO-22P	12.00 13.50
	Slip On Connectors	No Yes	FSO-22 FSO-22P	12.00 13.50	FSDO-22 FSDO-22P	12.00 13.50
	Plug-In ‡	No Yes	FPO-22 FPO-22P	12.00 13.50	FPDO-22 FPDO-22P	12.00 13.50

‡ Plug-in relay has a 125 volt maximum voltage rating. Max. coil voltage of 277 volts ac or 150 volts dc on all others. For industrial 8 pin socket, See page 126.

TYPE P — MULTIPOLE

Each pole of this relay consists of a Class 9007 precision snap switch. Its contacts are totally enclosed making this relay ideal on applications where dust and dirt interfere with the operation of exposed contacts. (See page 133 for dimensions).

25-50 HERTZ or DC

277 or 600 VOLTS MAX. †

Description			AC CLASS 8501				DC CLASS 7001			
No. of Poles	Number of Contacts		General Purpose Enclosure NEMA Type 1		Open Type With Binder Head Screws		General Purpose Enclosure NEMA Type 1		Open Type With Binder Head Screws	
	N.O.	N.C.	Type	Price	Type	Price	Type	Price	Type	Price
1	1	1	PG-1	\$ 21.	PO-1	\$ 18.	PG-1	\$ 27.	PO-1	\$ 24.
2	2	2	PG-2	24.	PO-2	21.	PG-2	30.	PO-2	27.
3	3	3	PG-3	27.	PO-3	24.	PG-3	33.	PO-3	30.
4	4	4	PG-4	30.	PO-4	27.	PG-4	36.	PO-4	33.
6	6	6	PG-6	38.	PO-6	35.	PG-6	44.	PO-6	41.
8	8	8	PG-8	44.	PO-8	41.	PG-8	50.	PO-8	47.

Ⓒ Each pole of the relay consists of an isolated normally open and normally closed circuit. Due to electrical clearance, the normally open and normally closed circuits of any one pole must be used on circuits of the same polarity.

† One, two, three and four pole relays are rated 600 volts max. and the six and eight pole relays are rated 277 volts max. Coils, however, can be supplied for all Type P relays to 600 volts ac or 250 volts dc.

For separate NEMA 1 enclosures, see Page 210.

ELECTRICAL CONTACT RATINGS

TYPE P — 1-4 POLES						TYPE F					
AC Pilot Duty Amperes *			DC Pilot Duty Amperes			Type Number	Volts	AC Pilot Duty ▲ *		Volts	DC Pilot Duty (Inductive)
Volts	Make	Break	Volts	Single Throw	Double Throw			Make	Break		
110	40	15	110		0.5	FO, FBO, FSO FDO, FBDO, FSDO	0-120 120-277	60 Amps. 6900 VA.	6.0 Amps. 690 VA	0-24 25-250	10 Amps. 24 VA
220	20	10	220		0.2						
440	10	6	440								
600	8	5	600		0.02						
TYPE P — 6-8 POLES						FPO, FPDO	0-125	60 Amps.	6.0 Amps.	0-24 25-120	10 Amps. 24 VA
0-115	30	3	115	1.0	0.2						
115-277	3450 VA	345 VA	230	0.3	0.1						

▲ The ac continuous ampere rating is 10 amperes based on a 75% power factor.

* The ac pilot duty rating is based on 35% power factor.

ORDERING INFORMATION REQUIRED: Specify class and type number of relay. Give voltage and frequency of operating coil.



SCHEDULE DS-1 DISCOUNT

PAGE 129

CONTROL RELAYS—TYPE G

**CLASS
8501**

Class 8501 Type G systems relays feature small size, convertible contacts, modular construction, timer and mechanically held attachments. Single coil selection for all relays with or without attachments. (See page 133 for dimensions.)

AC OPERATED — OPEN TYPE▲

50-60 HERTZ

300 VOLTS MAX.

Number of Instantaneous Contacts					Standard Relay		Mechanically Held Relay		Relay Operated Pneumatic Timer *		
Total	Convertible		Fixed						Time Delay After De-energization	Time Delay After Energization	Price
	Normally Open	Normally Closed	Normally Open	Normally Closed	Type	Price	Type	Type	Price		
2	0	0	0	0	GO-00	8.	....	GO-00-GD	GO-00-GE	\$36.	
	2	0	0	0	GO-20	12.	GO-20-GL	\$28.	GO-20-GD	GO-20-GE	40.
	0	2	0	0	GO-02	14.	GO-02-GL	28.	GO-02-GD	GO-02-GE	42.
3	3	0	0	0	GO-30	14.	GO-30-GL	28.	GO-30-GD	GO-30-GE	42.
	2	1	0	0	GO-21	16.	GO-21-GL	30.	GO-21-GD	GO-21-GE	44.
	1	2	0	0	GO-12	16.	GO-12-GL	30.	GO-12-GD	GO-12-GE	44.
4	0	3	0	0	GO-03	16.	GO-03-GL	30.	GO-03-GD	GO-03-GE	44.
	4	0	0	0	GO-40	16.	GO-40-GL	30.	GO-40-GD	GO-40-GE	44.
	3	1	0	0	GO-31	18.	GO-31-GL	32.	GO-31-GD	GO-31-GE	46.
5	2	2	0	0	GO-22	18.	GO-22-GL	32.	GO-22-GD	GO-22-GE	46.
	1	3	0	0	GO-13	18.	GO-13-GL	32.	GO-13-GD	GO-13-GE	46.
	0	4	0	0	GO-04	18.	GO-04-GL	32.	GO-04-GD	GO-04-GE	46.
6	6	0	0	0	GO-60	20.	GO-60-GL	34.	.....	.....	.....
	5	1	0	0	GO-51	22.	GO-51-GL	36.	.....	.....	.....
	4	2	0	0	GO-42	22.	GO-42-GL	36.	.....	.....	.....
	3	3	0	0	GO-33	22.	GO-33-GL	36.	.....	.....	.....
	2	4	0	0	GO-24	22.	GO-24-GL	36.	.....	.....	.....
	1	5	0	0	GO-15	22.	GO-15-GL	36.	.....	.....	.....
8	0	6	0	0	GO-06	22.	GO-06-GL	36.	.....	.....	.....
	8	0	0	0	GO-80	24.	GO-80-GL	38.	.....	.....	.....
	7	1	0	0	GO-71	26.	GO-71-GL	40.	.....	.....	.....
	6	2	0	0	GO-62	26.	GO-62-GL	40.	.....	.....	.....
	5	3	0	0	GO-53	26.	GO-53-GL	40.	.....	.....	.....
	4	4	0	0	GO-44	26.	GO-44-GL	40.	.....	.....	.....
	3	5	0	0	GO-35	26.	GO-35-GL	40.	.....	.....	.....
	2	6	0	0	GO-26	26.	GO-26-GL	40.	.....	.....	.....
8	1	7	0	0	GO-17	26.	GO-17-GL	40.	.....	.....	.....
	0	8	0	0	GO-08	26.	GO-08-GL	40.	.....	.....	.....
8	0	0	4	4	GO-00-GU-44	18.	.....	.....	.....	.....
10	2	0	4	4	GO-20-GU-44	22.	.....	.....	.....	.....
	1	1	4	4	GO-11-GU-44	24.	.....	.....	.....	.....
	0	2	4	4	GO-02-GU-44	24.	.....	.....	.....	.....
12	4	0	4	4	GO-40-GU-44	26.	.....	.....	.....	.....
	3	1	4	4	GO-31-GU-44	28.	.....	.....	.....	.....
	2	2	4	4	GO-22-GU-44	28.	.....	.....	.....	.....
	1	3	4	4	GO-13-GU-44	28.	.....	.....	.....	.....
	0	4	4	4	GO-04-GU-44	28.	.....	.....	.....	.....

▲Devices available in NEMA 1 enclosure except 6 and 8 pole mechanically held relays. Add \$3.00 to open type price and substitute letter "G" for "O" in type number. For separate NEMA 1 enclosures, see Page 210.

*Relay operated pneumatic timers have a normally open and normally closed timed contact which must be used on circuits of same polarity.



Type GO-40



Type GO-80



Type GO-40-GU-44

AC MAGNETIC COILS

Coil Prefix★	Hertz	SUFFIX NUMBERS★								COIL BURDEN VOLT—AMPERES	
		12 Volts	24 Volts	48 Volts	110 Volts	120 Volts	208 Volts	240 Volts	277 Volts	Inrush	Sealed
31021-400-	60	30	39	47	59	60	67	69	70	100	13
	50	32	41	50	60	62	69	71	72	90	13

Type GL latch attachment coils have a 24 VA inrush and 12 VA sealed.

AC magnet coils are designed to operate on line voltages fluctuating as much as 15% below and 10% above nominal voltage.

★Complete coil number consists of prefix followed by suffix, as 31021-400-30.

ELECTRICAL CONTACT RATINGS

CLASS 8501			AC RATINGS						DC RATINGS			
Type	Device	Volts	Inductive Pilot Duty — 35% Power Factor				Resistive 75% Power Factor	Inductive Pilot Duty		Resistive		
			Make		Break			Continuous Carrying Amperes	Make and Break Amperes	Continuous Carrying Amperes	Make and Break Amperes	Continuous Carrying Amperes
			Amps.	VA	Amps.	VA						
GO GDO GU	Relays	120 240	60 30	7200 7200	5 3	720 720	10 10	10 10	1.0 0.5	10 10	5.0 0.5	10 10
GD GE	Pneumatic Timer	120 240	30 15	3600 3600	3 1.5	360 360	5 5	5 5	0.5 0.25	5 5	1.0 0.25	5 5
GTO	Solid State Timer	120	1.5	180	0.4	50	1	1	0.05	1	0.1	1

ORDERING INFORMATION REQUIRED: 1. Class and type number. 2. Voltage and frequency of operating coil.



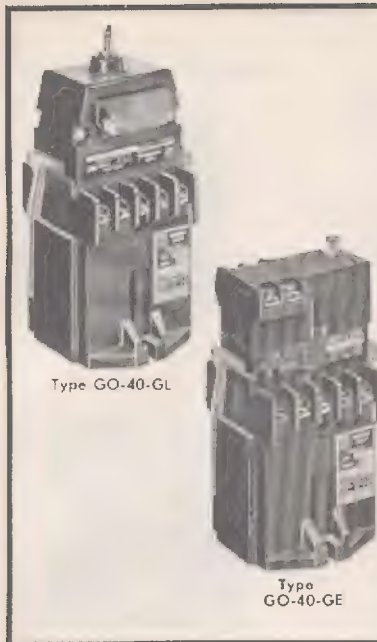
TYPE G—CONTROL RELAYS

CLASS
8501

DC OPERATED — OPEN TYPE ▲

6-250 VOLT COILS — DC

300 VOLTS MAX.



No. of Poles on Relay (Instantaneous Contacts)	No. of Poles Normally Open	No. of Poles Normally Closed	Standard Relay		Mechanically Held Relay		Relay Operated Pneumatic Timer*		
			Type	Price	Type	Price	Time Delay After De-energization	Time Delay After Energization	Price
0		0	GDO-20	\$ 17.	GDO-20-GDL	\$ 33.	GDO-00-GD	GDO-00-GE	\$ 41.
2	1	1	GDO-11	19.	GDO-11-GDL	35.	GDO-20-GD	GDO-20-GE	45.
	0	2	GDO-02	19.	GDO-02-GDL	35.	GDO-11-GD	GDO-11-GE	47.
					GDO-02-GD		GDO-02-GE		47.
3	3	0	GDO-30	19.	GDO-30-GDL	35.			
	2	1	GDO-21	21.	GDO-21-GDL	37.			
	1	2	GDO-12	21.	GDO-12-GDL	37.			
	0	3	GDO-03	21.	GDO-03-GDL	37.			
4	4	0	GDO-40	21.	GDO-40-GDL	37.			
	3	1	GDO-31	23.	GDO-31-GDL	39.			
	2	2	GDO-22	23.	GDO-22-GDL	39.			
	1	3	GDO-13	23.	GDO-13-GDL	39.			
	0	4	GDO-04	23.	GDO-04-GDL	39.			
6	6	0	GDO-60	25.	GDO-60-GDL	41.			
	5	1	GDO-51	27.	GDO-51-GDL	43.			
	4	2	GDO-42	27.	GDO-42-GDL	43.			
	3	3	GDO-33	27.	GDO-33-GDL	43.			
	2	4	GDO-24	27.	GDO-24-GDL	43.			
	1	5	GDO-15	27.	GDO-15-GDL	43.			
	0	6	GDO-06	27.	GDO-06-GDL	43.			
8	8	0	GDO-80	29.	GDO-80-GDL	45.			
	7	1	GDO-71	31.	GDO-71-GDL	47.			
	6	2	GDO-62	31.	GDO-62-GDL	47.			
	5	3	GDO-53	31.	GDO-53-GDL	47.			
	4	4	GDO-44	31.	GDO-44-GDL	47.			
	3	5	GDO-35	31.	GDO-35-GDL	47.			
	2	6	GDO-26	31.	GDO-26-GDL	47.			
	1	7	GDO-17	31.	GDO-17-GDL	47.			
	0	8	GDO-08	31.	GDO-08-GDL	47.			

▲ Devices available in NEMA 1 enclosure except 6 and 8 pole mechanically held relays. Add \$3.00 to open type price and substitute letter "G" for "O" in type number. For separate NEMA 1 enclosures, see Page 210.

* Relay operated pneumatic timers have a normally open and normally closed timed contact which must be used in circuits of same polarity.

AVERAGE OPERATING TIMES

Device	Milli-Seconds	
	Pick-up	Drop-out
AC Relay	11	6
DC Relay	28	12

DC MAGNET COILS

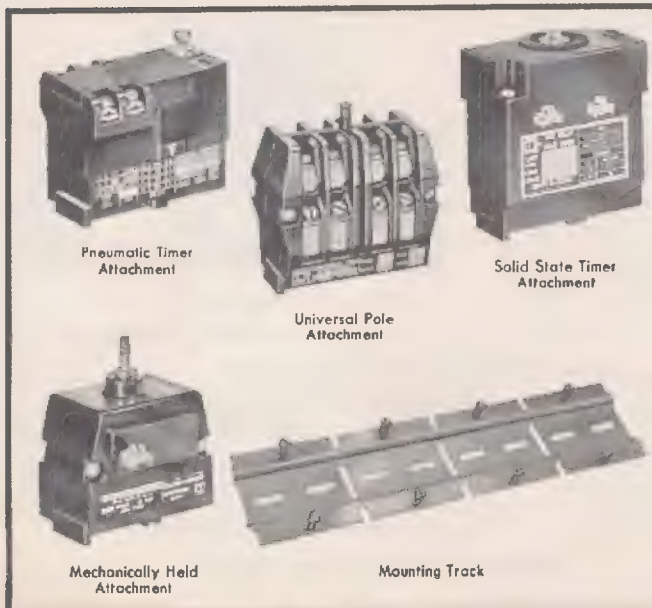
Coil Prefix‡	SUFFIX NUMBERS					Coil Burden (Watts)
	12 Volts	24 Volts	48 Volts	115 Volts	230 Volts	
31030-400-	28	37	46	58	67	8

Type GDL latch attachment coils have a burden of 36 watts.

DC magnet coils are designed to operate on line voltages fluctuating as much as 20% below and 10% above nominal voltage.

‡ Complete coil numbers consist of prefix followed by suffix, as 31030-400-28.

ATTACHMENTS AND ACCESSORIES FOR TYPE G RELAYS



Description	AC		DC	
	Type	Price	Type	Price
Mechanically Held Attachment . . .	GL	\$14.00	GDL (C)	\$16.00
Pneumatic Timer Attachment — Time Delay after De-energization ★	GD	28.00	GD	28.00
Pneumatic Timer Attachment — Time Delay after Energization ★	GE	28.00	GE	28.00
Solid State Timer Attachment — Time Delay after Energization †	GTO-1	55.00		
Universal Pole Attachment	GU-44	10.00		
Mounting Track:				
12" long for 4 relays	G-4	1.00	G-4	1.00
24" long for 8 relays	G-8	1.50	G-8	1.50
36" long for 12 relays	G-12	2.25	G-12	2.25
48" long for 16 relays	G-16	2.75	G-16	2.75

★ Pneumatic timer attachment fits 2, 3 and 4 pole ac relays and are adjustable from .2 seconds to 1 minute. Timing accuracy is $\pm 15\%$. DC relay operated timers must be factory assembled.

† Solid state timer attachment has a timing range of from .2 seconds to 30 seconds with an accuracy of $\pm 2\%$.

(C) The dc mechanically held attachment has intermittent rated coil. Basic relay must have one extra normally open contact which must be wired in series with the latch attachment coil.

ORDERING INFORMATION REQUIRED: Specify class and type number of relay. Give voltage and frequency of operating coil.



SCHEDULE DS-1 DISCOUNT

PAGE 131

CONTROL RELAYS—TYPE H

The Type H relay is a full 600 volt NEMA rated device featuring: convertible contacts, N.O. and N.C. contact indication, visible contacts, a heavy duty molded coil and magnet assembly, and "adder poles" to increase stock flexibility. (See page 133 for dimensions.)

CLASS
8501

The Type HL latching relay offers all of the flexibility and features found in the standard relay above with no increase in panel area. A two coil permanent magnet latching system is used to eliminate the need for coil clearing contacts.

STANDARD RELAY

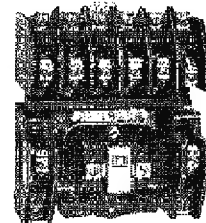
50-60 HERTZ

600 VOLTS MAX.

Number of Contacts			General Purpose Enclosure NEMA Type 1		Water-tight Stainless-Steel Enclosure NEMA Type 4		Class I, Group D Class II, Groups E, F and G NEMA Types 7 & 9		Open Type	
Total	N.O.	N.C.	Type	Price	Type	Price	Type	Price	Type	Price
2	2	0	HG-20	\$18.	HW-20	\$51.	HR-20	\$71.	HO-20	\$15.
	1	1	HG-11	21.	HW-11	54.	HR-11	74.	HO-11	18.
	0	2	HG-02	21.	HW-02	54.	HR-02	74.	HO-02	18.
3	3	0	HG-30	21.	HW-30	54.	HR-30	74.	HO-30	18.
	2	1	HG-21	24.	HW-21	57.	HR-21	77.	HO-21	21.
	1	2	HG-12	24.	HW-12	57.	HR-12	77.	HO-12	21.
4	0	3	HG-03	24.	HW-03	57.	HR-03	77.	HO-03	21.
	1	0	HG-40	23.	HW-40	56.	HR-40	76.	HO-40	20.
	3	1	HG-31	26.	HW-31	59.	HR-31	79.	HO-31	23.
6	2	2	HG-22	26.	HW-22	59.	HR-22	79.	HO-22	23.
	1	3	HG-13	26.	HW-13	59.	HR-13	79.	HO-13	23.
	0	4	HG-04	26.	HW-04	59.	HR-04	79.	HO-04	23.
8	0	0	HG-00	33.	HW-00	66.	HR-00	86.	HO-00	30.
	5	1	HG-51	36.	HW-51	69.	HR-51	89.	HO-51	33.
	4	2	HG-42	36.	HW-42	69.	HR-42	89.	HO-42	33.
6	3	3	HG-33	36.	HW-33	69.	HR-33	89.	HO-33	33.
	2	4	HG-24	36.	HW-24	69.	HR-24	89.	HO-24	33.
	1	5	HG-15	36.	HW-15	69.	HR-15	89.	HO-15	33.
8	0	6	HG-06	36.	HW-06	69.	HR-06	89.	HO-06	33.
	3	0	HG-80	39.	HW-80	72.	HR-80	92.	HO-80	36.
	7	1	HG-71	42.	HW-71	75.	HR-71	95.	HO-71	39.
6	6	2	HG-62	42.	HW-62	75.	HR-62	95.	HO-62	39.
	5	3	HG-53	42.	HW-53	75.	HR-53	95.	HO-53	39.
	4	4	HG-44	42.	HW-44	75.	HR-44	95.	HO-44	39.
8	3	5	HG-35	42.	HW-35	75.	HR-35	95.	HO-35	39.
	2	6	HG-26	42.	HW-26	75.	HR-26	95.	HO-26	39.
	1	7	HG-17	42.	HW-17	75.	HR-17	95.	HO-17	39.
	0	8	HG-08	42.	HW-08	75.	HR-08	95.	HO-08	39.



Type HO-40



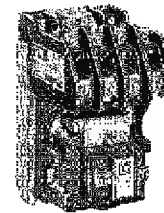
Type HO-80

LATCHING RELAY

50-60 HERTZ

600 VOLTS MAX.

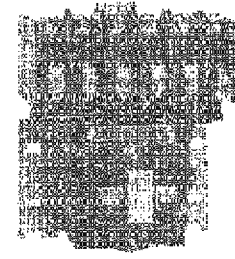
Number of Contacts			General Purpose Enclosure NEMA Type 1		Water-tight Stainless-Steel Enclosure NEMA Type 4		Open Type	
Total	N.O.	N.C.	Type	Price	Type	Price	Type	Price
2	2	0	HLG-20	\$32.	HLW-20	\$65.	HLO-20	\$29.
	1	1	HLG-11	35.	HLW-11	68.	HLO-11	32.
	0	2	HLG-02	35.	HLW-02	68.	HLO-02	32.
3	3	0	HLG-30	35.	HLW-30	65.	HLO-30	32.
	2	1	HLG-21	38.	HLW-21	71.	HLO-21	35.
	1	2	HLG-12	38.	HLW-12	71.	HLO-12	35.
4	0	3	HLG-03	38.	HLW-03	71.	HLO-03	35.
	4	0	HLG-40	37.	HLW-40	70.	HLO-40	34.
	3	1	HLG-31	40.	HLW-31	73.	HLO-31	37.
6	2	2	HLG-22	40.	HLW-22	73.	HLO-22	37.
	1	3	HLG-13	40.	HLW-13	73.	HLO-13	37.
	0	4	HLG-04	40.	HLW-04	73.	HLO-04	37.
8	5	0	HLG-80	47.	HLW-80	80.	HLO-80	44.
	5	1	HLG-61	50.	HLW-61	83.	HLO-61	47.
	4	2	HLG-42	50.	HLW-42	83.	HLO-42	47.
6	3	3	HLG-33	50.	HLW-33	83.	HLO-33	47.
	2	4	HLG-24	50.	HLW-24	83.	HLO-24	47.
	1	5	HLG-15	50.	HLW-15	83.	HLO-15	47.
8	0	6	HLG-06	50.	HLW-06	83.	HLO-06	47.
	3	0	HLG-80	53.	HLW-80	86.	HLO-80	50.
	7	1	HLG-71	56.	HLW-71	89.	HLO-71	53.
6	6	2	HLG-62	56.	HLW-62	89.	HLO-62	53.
	5	3	HLG-53	56.	HLW-53	89.	HLO-53	53.
	4	4	HLG-44	56.	HLW-44	89.	HLO-44	53.
8	3	5	HLG-35	56.	HLW-35	89.	HLO-35	53.
	2	6	HLG-26	56.	HLW-26	89.	HLO-26	53.
	1	7	HLG-17	56.	HLW-17	89.	HLO-17	53.
	0	8	HLG-08	56.	HLW-08	89.	HLO-08	53.



Type HLO-40



Type H1L



Type HC-60



Type H1R

ELECTRICAL CONTACT RATINGS

Volts	AC RATINGS					
	Inductive Pilot Duty 35% Power Factor					Resistive 75% Power Factor
	Make		Break		Continuous Amps.	Make, Break and Continuous Amps.
	Amps.	VA	Amps.	VA		
120	60	7200	6	720	10	10
240	30	7200	3	720	10	10
480	15	7200	1.5	720	10	10
600	12	7200	1.2	720	10	10

CONVERTIBLE ADDER POLES

Contact Configuration	Type Number		Price
	Left Hand Mounting	Right Hand Mounting	
1-Normally Open	H1L	H1R	\$3.
1-Normally Closed	H2L	H2R	3.

▲Adder poles can be mounted on any 6 pole relay without additional parts.

ORDERING INFORMATION REQUIRED

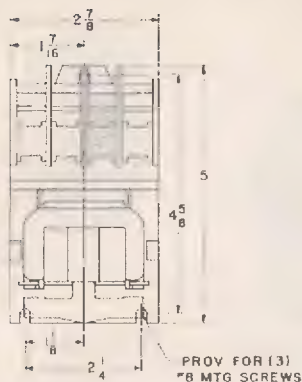
1. Class and type number.
2. Voltage and frequency of operating coils.



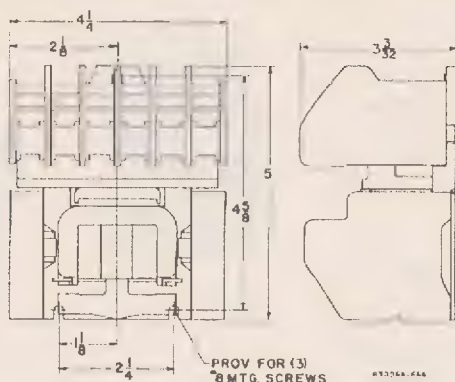
CONTROL RELAYS

DIMENSIONS AND WEIGHTS

APPROXIMATE DIMENSIONS AND SHIPPING WEIGHTS

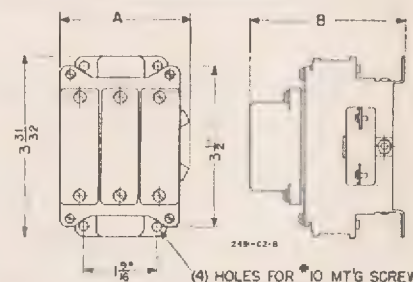


Class 8501, Type H - 2 thru 4 Pole
Weight — 2 Lbs.



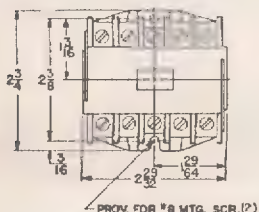
Class 8501, Type H 6 and 8 Pole
Weight — 2½ Lbs.

Type	CLASS 8501	
	A	B
P01 P02 P03	$2\frac{3}{4}$	$3\frac{7}{8}$
P04	$3\frac{5}{8}$	
P06	$2\frac{3}{4}$	$3\frac{1}{2}$
P08	$3\frac{5}{8}$	

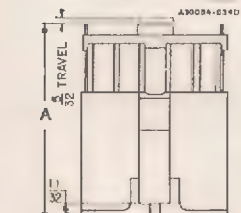


Class 8501, Type PO Relay
Weight — 1¼ Lbs.

Class 8501, Type HLO dimensions same as for the Type H above except that depth is 4" rather than 3-3/32".

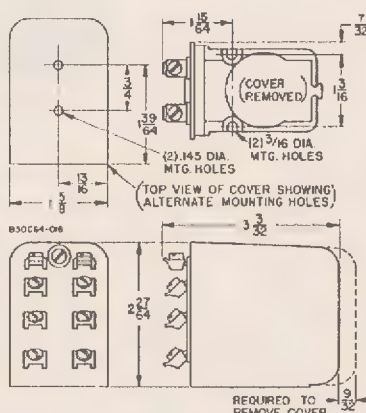


 A90084-634D

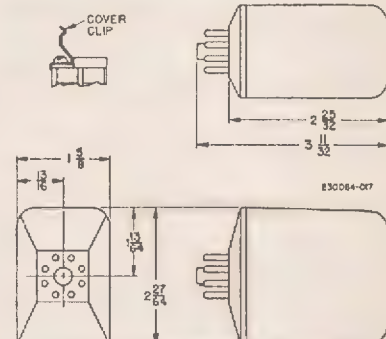


Class B501, Type GO & GDO
Weight — 2 Lbs.

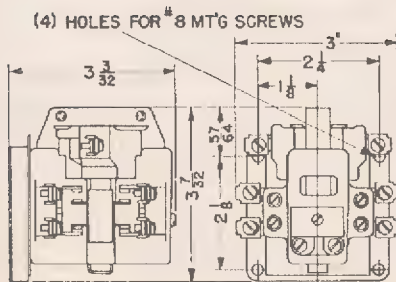
Class 8501, Type G	A
2, 3 and 4 pole relay	4½
6 and 8 pole relay	5¼
10 and 12 pole relay	6¾
2, 3 and 4 pole relay with timer	5¾
2, 3 and 4 pole mechanically held relay	6½
6 and 8 pole mechanically held relay	7¾



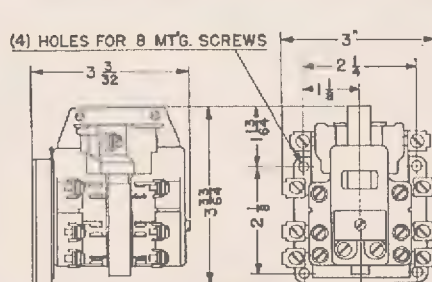
Class 8501, Type FO, FBO, FSO,
FDO, FBDO and FSDO
Weight — ½ Lb.



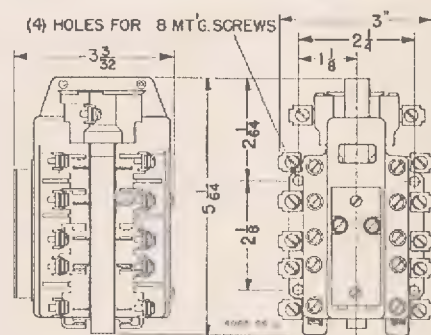
Class 8501, Type FPO and FPDO
Relays
Weight — 1/2 Lb.



2959-G27
Class 8501
Types DO-02, DO-20, DO-22
Weight — 1½ lbs.



2959-C29
Class 8501
Types DO-40, DO-42
Weight — 1½ Lbs.



Class 8501
Types DO-44, 60, 62, 64, 80, 82
Weight — 2 lbs.



SOLID STATE RELAYS

CLASS
8501

This series of specialized control equipment is intended for those critical applications in which exceptional life and reliability are paramount or where it is necessary to initiate control action from low level signals or from areas containing hazardous atmospheres.

TRANSISTORIZED RELAYS

These relays are particularly well suited to applications where the initiating contacts have low current carrying capabilities or to those applications where it is desired to detect the opening or closing of high resistance contacts. In addition these relays will detect the presence or absence of external dc voltages.

RELAYS WITH INTRINSICALLY SAFE PILOT CIRCUITS

INTRINSIC SAFETY is an explosion hazard protection technique for electrical control equipment. The control device is so constructed that when properly installed and maintained, any sparking that may occur under normal or abnormal conditions, either in the pilot device or in the associated circuit, is incapable of causing ignition of the specific hazardous atmospheric mixture.

SOLID STATE RELAYS

These relays are intended for industrial control applications where exceptional reliability, switching life or high duty cycle are indicated. The solid state relay can be substituted for regular electromechanical relays in critical control applications. They require the identical space and mounting provisions as the Square D Type G control relay.



Class 8501 Type TO-20
Transistorized Relay



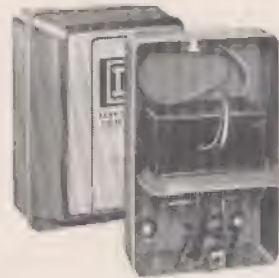
Class 8501 Type TO-21
Transistorized Relay



Class 8501 Types TSO-20,
TSO-11, TSO-02
Solid State Relay



Class 8501 Type TG-33
AC Relay with Intrinsically
Safe Pilot Circuits



Class 8501 Type TG-32
Solid State Pilot Relay with
Intrinsically Safe Pilot Circuits

50-60 HERTZ

CLASS 8501

Device	Description of Output	Control Supply Voltage	Open Type		General Purpose Enclosure NEMA Type 1		Dust-tight Industrial Use Enclosure NEMA Type 12	
			Type	Price	Type	Price	Type	Price
Transistorized Relay	10 Amp.-DPT. Relay	120, 240	TO-20	\$62.	TG-20	\$ 69.	TA-20	\$86.
Transistorized Relay	3 Amp.-DPT. Relay	120	TO-21	42.	TG-21	49.		
Intrinsically Safe AC Relay	SPDT Relay	120			TG-31	90.		
Intrinsically Safe AC Relay	SPDT Relay	240/480, 550			TG-33	105.		
Intrinsically Safe Pilot Relay	1 N.O. Contact	120			TG-32	60.		
Solid State Relay	2 N.O. "Contacts" ★	120	TSO-20	48.		*		
Solid State Relay	1 N.O. - 1 N.C. "Contacts" ★	120	TSO-11	53.		*		
Solid State Relay	2 N.C. "Contacts" ★	120	TSO-02	58.		*		

★ Functionally equivalent to NEMA Type 5.

U.L. Listed for actuation by Intrinsically Safe (low energy) pilot circuits extending into a hazardous location Class I -- Groups A, B, C or D, or Class II, Groups E, F, or G. The NEMA 1 controller is intended to be mounted in a non-hazardous area.

★ Each "contact" has its own "coil" (input); for two pole operation connect "coils" (inputs) in parallel.

* For a NEMA 1 enclosed device order open type device and Class 8501 Type UE-4 enclosure from Page 210.

ELECTRICAL OPERATING CHARACTERISTICS

Device	Volts	AC AMPERES				DC AMPERES	
		Inductive Pilot Duty 35% Power Factor			Resistive Power Factor 75% Make, Break and Continuous	Inductive Pilot Duty	
		Make	Break	Continuous		Volts	Make & Break
TO-20	120	60	6	10	10	0-24	10
	240	30	3	10	10	25-250	24 VA
TO-21	120	15	1.5	3	3	0-30	1.5
	240	60	6	10	10		
TG-31	240	30	3	10	10		
	480	15	1.5	10	5		
	600	12	1.2	10	5		
	Volts	"CONTACT" RATING AC AMPERES			"COIL" BURDEN		
		Make	Break	Continuous	Volts	Inrush	Sealed
TG-32	120	.5	.09	.09			
TSO-20, TSO-11, TSO-02	120	10	1	1	120	9.5 VA Max.	4.5 VA Max.

ORDERING INFORMATION REQUIRED — Order devices by class and type number and control supply voltage.



AC MAGNETIC CONTACTORS

SIZES 00 TO 8

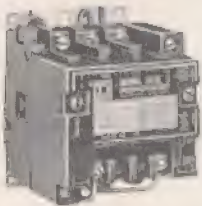
WITHOUT OVERLOAD PROTECTION

Magnetic contactors may be used for electric motor loads within the horsepower rating shown, if overload protection is not required, or if other provision is made for it. All contactors include a N.O. holding circuit interlock as standard. (See page 136 for dimensions.)

**CLASS
8502**

50-60 HERTZ

600 VOLTS MAX.



Class 8502, Type SCO-2
Size 1, 3 pole contactor



Class 8502, Type SDC-2
Size 2, 3 Pole Contactor



Class 8502, Type S in NEMA 1
enclosure with HAND-OFF-AUTO
selector switch and pilot light.

No. of Poles	NEMA Size	AC Ampere Rating		Horsepower Rating		General Purpose Enclosure NEMA Type 1		Water-tight Enclosure (AISI #304 Stainless Steel Sizes 0-5) NEMA Type 4		Dust-tight Industrial Use Enclosure NEMA Type 12 (Type 3 $\frac{1}{2}$)		Open Type	
		Continuous Current Rating	Incr. Incandescent Lamp Load 250 V. Max.	Volts	Max. HP	Type	Price	Type	Price	Type	Price	Type	Price
1 Pole Single Phase†	00	9	5	115-230	$\frac{1}{8}$	AG-5	\$ 19.	Use Size 0		Use Size 0		AO-5	\$ 17.
	0	18	10	115-230	$\frac{1}{4}$	SBG-5	25.	SBW-15	\$ 60.	SBA-5	\$ 37.	SBO-5	23.
	1	27	15	115-230	$\frac{3}{8}$	SCG-5	30.	SCW-15	66.	SCA-5	42.	SCO-5	28.
2 Pole Single Phase†	00	9	5	115-230	$\frac{1}{8}$	AG-1	22.	Use Size 0		Use Size 0		AO-1	20.
	0	18	10	115-230	$\frac{1}{4}$	SBG-1	28.	SBW-11	63.	SBA-1	40.	SBO-1	26.
	1	27	15	115-230	$\frac{3}{8}$	SCG-1	33.	SCW-11	69.	SCA-1	45.	SCO-1	31.
	2	45	30	115-230	$\frac{1}{2}$	SDG-1	68.	SDW-11	140.	SDA-1	80.	SDO-1	58.
	3	90	60	115-230	$\frac{1}{2}$	SEG-1	112.	SEW-11	214.	SEA-1	138.	SEO-1	82.
	4	135	120	208-220	1	FG-1	264.	FW-11	438.	FA-1	350.	FO-1	222.
	5	270	240	208-220	1	GG-1	556.	GW-11	778.	GA-1	778.	GO-1	481.
	6	540	480	208-220	1	HG-1	1481.	HW-1	1961.	HA-1	1731.	HO-1	1144.
	7	810	720	208-220	1	JG-1	1987.	JW-1	2487.	JA-1	2267.	JO-1	1670.
	8	1215	1080	208-220	1	KG-1	2810.					KO-1	2410.
3 Pole Poly-phase	00	9	5	208-220 440-550	$\frac{1}{8}$	AG-2	25.	Use Size 0		Use Size 0		AO-2	23.
	0	18	10	208-220 440-550	$\frac{1}{4}$	SBG-2	31.	SBW-12	86.	SBA-2	43.	SBO-2	29.
	1	27	15	208-220 440-550	$\frac{3}{8}$	SCG-2	38.	SCW-12	72.	SCA-2	48.	SCO-2	34.
	2	45	30	208-220 440-550	$\frac{1}{2}$	SDG-2	72.	SDW-12	144.	SDA-2	94.	SDO-2	62.
	3	90	60	208-220 440-550	$\frac{3}{4}$	SEG-2	120.	SEW-12	222.	SEA-2	146.	SEO-2	100.
	4	135	120	208-220 440-550	1	FG-2	282.	FW-12	458.	FA-2	368.	FO-2	240.
	5	270	240	208-220 440-550	1	GG-2	600.	GW-12	820.	GA-2	820.	GO-2	523.
	6	540	480	208-220 440-550	1	HG-2	1652.	HW-2	2152.	HA-2	1922.	HO-2	1335.
	7	810	720	208-220 440-550	1	JG-2	2222.	JW-2	2722.	JA-2	2492.	JO-2	1905.
	8	1215	1080	208-220 440-550	1	KG-2	3320.	KW-2	3820.	KA-2	3530.	KO-2	2820.
4 Pole Poly-phase	0	18	10	220 440-550	$\frac{1}{4}$	SBG-3	89.	SBW-13	75.	SBA-3	51.	SBO-3	37.
	1	27	15	220 440-550	$\frac{3}{8}$	SCG-3	44.	SCW-13	80.	SCA-3	56.	SCO-3	42.
	2	45	30	220 440-550	$\frac{1}{2}$	SDG-3	90.	SDW-13	190.	SDA-3	112.	SDO-3	80.
	3	90	60	220 440-550	$\frac{3}{4}$	EG-3	148.	EW-13	278.	EA-3	174.	EO-3	128.
	4	135	120	220 440-550	1	FG-3	376.	FW-13	622.	FA-3	492.	FO-3	334.
	5	270	240	220 440-550	1	GG-3	1115.	GW-13	1857.	GA-3	1357.	GO-3	961.
5 Pole Poly-phase	0	18	10	220 440-550	$\frac{1}{4}$	SBG-4	50.	SBW-14	85.	SBA-4	62.	SBO-4	48.
	1	27	15	220 440-550	$\frac{3}{8}$	SCG-4	55.	SCW-14	91.	SCA-4	67.	SCO-4	53.
	2	45	30	220 440-550	$\frac{1}{2}$	SDG-4	130.	SDW-14	230.	SDA-4	152.	SDO-4	120.

† The holding circuit interlock of the Size 00, one, two and three pole, and Size 0 and 1, one and two pole contactors, has the same rating as the power pole. If this interlock is not required, order contactor with one less pole.

‡ Suitable for NEMA Type 3 & 3R applications.

ORDERING INFORMATION REQUIRED

1. Class and type number.
2. Line voltage, phase and frequency.
3. Control voltage and frequency if different from line voltage.
4. Special features or modifications. (See page 142 for listing of more common modifications.)



AC MAGNETIC CONTACTORS

DIMENSIONS FOR TYPES A, S, F AND G

CLASS
8502

APPROXIMATE DIMENSIONS AND SHIPPING WEIGHTS

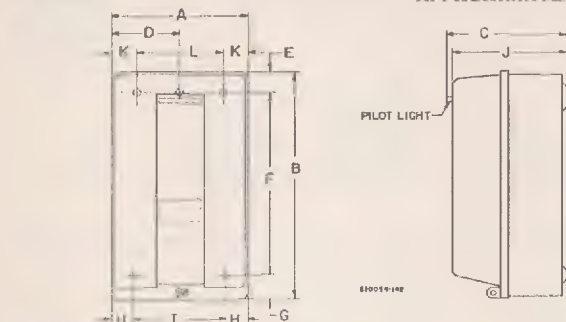


Figure 1 — Size 0-2, 1-5 pole, and Size 3, 2-3 pole, Type S, contactors, NEMA 1 general purpose enclosure.

NEMA Size	Type	No. of Poles	Mounting Screws	Dimensions — NEMA 1 (Refer to Figure 1)												Wt. (lbs)
				A	B	C	D	E	F	G	H	I	J	K	L	
0	SDG	1-5	(3) 10	6	10	5 1/2	3	3 1/2	8 1/2	1	1 1/2	4 1/2	5	..	7 1/2	
1	SDG	2-5	(4) 10	7 1/2	12 1/2	6 1/2	3 1/2	4 1/2	10 1/2	1 1/2	2 1/2	5 1/2	6 1/2	3 1/2	5 1/2	14 1/2
2	SDG	2-5	(4) 10	11 1/2	21 1/2	7 1/2	4 1/2	5 1/2	18 1/2	1 1/2	2 1/2	8 1/2	9 1/2	4 1/2	8 1/2	34
3	SEG	2-3	(4) 10	11 1/2	21 1/2	7 1/2	4 1/2	5 1/2	18 1/2	1 1/2	2 1/2	8 1/2	9 1/2	4 1/2	8 1/2	34

NEMA Size	Type	No. of Poles	Mounting Screws	Dimensions — Open Type (Refer to Figure 2)									Wt. (lbs)
				A	B	C	D	E	F	G	H	I	
0	SDO-1, 2, 5	1-3	(2) 10	3 1/2	4 1/2	4 1/2	1 1/2	1 1/2	7/32	3 1/4	...	...	4
1	SDO-1, 2, 5	4-5	(2) 10	4 1/4	4 1/2	4 1/2	1 1/2	2 1/4	1/2	3 1/8	...	...	4 1/2
2	SDO-1, 2	2-3	(3) 10	4 1/4	5 1/4	4 1/2	2 1/2	2 1/2	1/2	4 1/2	1 1/2	1 1/2	6 1/2
2	SDO-3, 4	4-5	(3) 10	5 1/4	5 1/4	4 1/2	2 1/2	3 1/2	1/2	4 1/2	1 1/2	1 1/2	8 1/2
3	SEO-1, 2	2-3	(3) 10	5 1/4	7 1/2	6 1/2	1 1/2	3 1/2	1/2	6 1/2	3 1/4	4 1/4	14

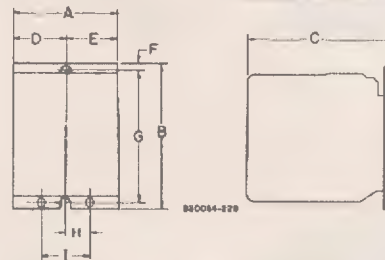


Figure 2 — Size 0-2, 1-5 pole and Size 3, 2-3 pole Type S, contactors, open type.

DIMENSION TABLE FOR OPEN TYPE A, F and G CONTACTORS

Dimensions	NEMA Size 00 Type A	NEMA Size 4 Type F	NEMA Size 5 Type G
	Figure 3	Figure 5	Figure 6
	1-3 Pole	2 or 3 Pole 4 Pole	2 Pole 3 Pole 4 Pole
A	See Figure 3	7 1/2 12 1/2 6 1/2	7 1/4 23 1/2 9 1/2
B	See Figure 3	11 11 2	20 1/2 20 1/2 2 1/2
C	See Figure 3	7 1/2 2 1/2	9 1/2 1 1/2
D	See Figure 3	...	...
E	See Figure 3	...	...
F	See Figure 3	...	...
G	See Figure 3	...	...
H	See Figure 3	...	...
I	See Figure 3	...	...
J	See Figure 3	...	...
K	See Figure 3	...	...
L	See Figure 3	...	...
M	See Figure 3	...	...
N	See Figure 3	...	...
O	See Figure 3	...	...
P	See Figure 3	...	...
Q	See Figure 3	...	...
R	See Figure 3	...	...
S	See Figure 3	...	...
T	See Figure 3	...	...
U	See Figure 3	...	...
V	See Figure 3	...	...
W	See Figure 3	...	...
X	See Figure 3	...	...
Y	See Figure 3	...	...
Z	See Figure 3	...	...
Wt. (Lbs.)	2	26 30	60 65 70

DIMENSION TABLE FOR TYPE A, F and G CONTACTORS IN NEMA TYPE 1 ENCLOSURE

Dimensions	NEMA Size 00 Type A	NEMA Size 4 Type F	NEMA Size 5 Type G
	Figure 4	Figure 7	Figure 7†
	1-3 Pole	2 or 3 Pole 4 Pole	2 Pole 3-4 Pole
A	See Figure 4	14 1/4 25 3/4 7 1/2	14 1/4 25 3/4 7 1/2
B	See Figure 4	12 22 1/2 1 1/2	11 1/2 39 8 1/2
C	See Figure 4	...	...
D	See Figure 4	...	...
E	See Figure 4	...	...
F	See Figure 4	...	...
G	See Figure 4	...	...
H	See Figure 4	...	...
I	See Figure 4	...	...
J	See Figure 4	...	...
K	See Figure 4	...	...
L	See Figure 4	...	...
M	See Figure 4	...	...
N	See Figure 4	...	...
O	See Figure 4	...	...
P	See Figure 4	...	...
Q	See Figure 4	...	...
R	See Figure 4	...	...
S	See Figure 4	...	...
T	See Figure 4	...	...
U	See Figure 4	...	...
V	See Figure 4	...	...
W	See Figure 4	...	...
X	See Figure 4	...	...
Y	See Figure 4	...	...
Z	See Figure 4	...	...
Wt. (Lbs.)	4	...	...

† Design is not as shown in diagram, but dimensions apply.

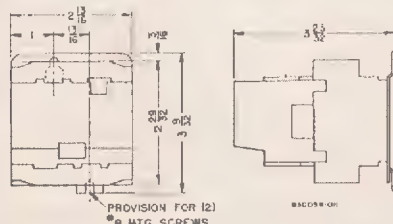


Figure 3
Class 8502, Size 00 Contactor

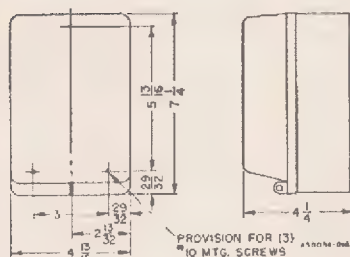


Figure 4
NEMA 1 Enclosure for Class 8502
Size 00 Contactor

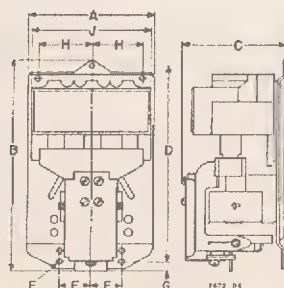


Figure 5
Class 8502 Contactors

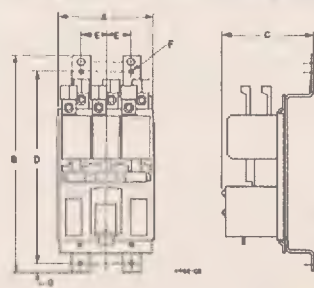


Figure 6
Class 8502 Size 5 Contactor

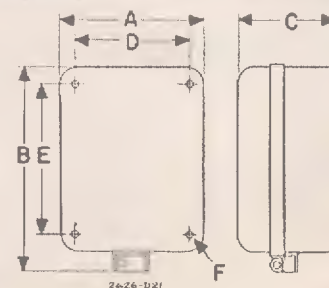


Figure 7
NEMA 1 Enclosure



AC MAGNETIC CONTACTORS

CLASS
8502

APPROXIMATE DIMENSIONS AND SHIPPING WEIGHTS

NEMA Size	Type	Form	No. of Poles	Mounting Screws	NEMA 1 General Purpose Enclosure Form FT — Fig. 9									Weight (lbs.)
					A	B	C	D	E	F	G	H	I	
0	SBG	FT	2-4	(4) #10	11 $\frac{1}{8}$	11 $\frac{1}{8}$	7 $\frac{1}{2}$	9 $\frac{3}{4}$	1 $\frac{1}{16}$	1 $\frac{1}{16}$	9 $\frac{3}{4}$	1 $\frac{1}{16}$	1 $\frac{1}{16}$	19
2	SDG	FT	2-4	(4) #10	14 $\frac{1}{8}$	14 $\frac{1}{8}$	9 $\frac{1}{2}$	12 $\frac{3}{4}$	1 $\frac{1}{16}$	1 $\frac{1}{16}$	12	1 $\frac{1}{16}$	1 $\frac{1}{16}$	27
3	SEG	FT	2-3	(4) #8										39

Refer to Nema 1 Standard Dimensions, Figure 1, Page 136.

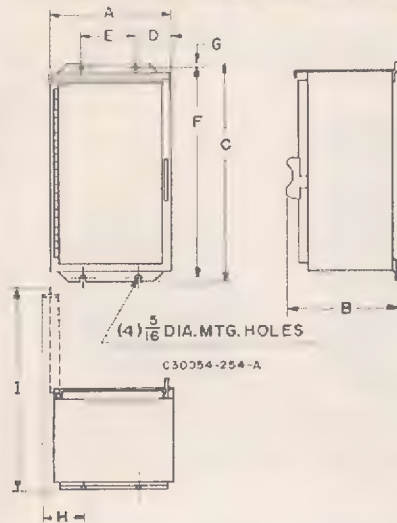


Figure 8 — Types SB, SC, SD, SF
NEMA Type 12
Industrial Use Enclosure

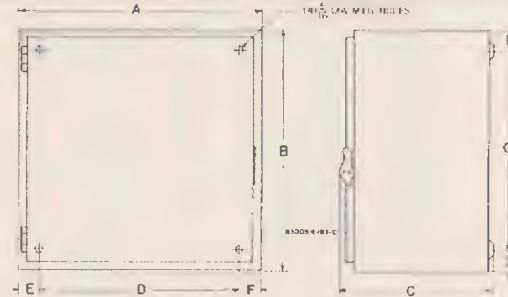


Figure 9 — NEMA Type 1 — General Purpose Enclosure
Types SB, SC, SD, Form FT
(Fused Control Circuit Transformer)

NEMA Size	Type	No. of Poles	NEMA Type 12 — Fig. 8									Weight (lbs.)
			A	B	C	D	E	F	G	H	I	
0	SBA	2-4	6 $\frac{3}{8}$	7 $\frac{1}{2}$	12 $\frac{3}{4}$	1 $\frac{1}{16}$	4 $\frac{1}{4}$	12	3 $\frac{1}{8}$	2	12 $\frac{1}{4}$	17
2	SDA	2-4	8 $\frac{1}{8}$	8 $\frac{1}{2}$	13 $\frac{1}{4}$	1 $\frac{1}{16}$	4 $\frac{1}{4}$	12 $\frac{1}{2}$	3 $\frac{1}{8}$	2 $\frac{1}{2}$	14 $\frac{3}{4}$	22
3	SEA	2-3	11 $\frac{1}{8}$	8 $\frac{1}{2}$	20 $\frac{1}{2}$	3 $\frac{1}{16}$	4 $\frac{1}{4}$	18 $\frac{3}{4}$	3 $\frac{1}{8}$	4 $\frac{1}{2}$	18	42

TYPES B, C, D and E — SIZES 0 TO 3 — CONTACTORS WITHOUT OVERLOAD PROTECTION

Magnetic contactors may be used for electric motor loads within the horsepower rating shown, if overload protection is not required, or if other provision is made for it. All contactors include a N.O. holding circuit interlock as standard.

25-60 HERTZ

600 VOLTS MAX.

No. of Poles	NEMA Size	AC Ampere Rating		Horsepower Rating		General Purpose Enclosure NEMA Type 1		Water-tight Enclosure AISI #304 Stainless Steel NEMA Type 4		Dust-tight Industrial Use Enclosure NEMA Type 12 (Type 3F)		Open Type	
		Continuous Current Rating	Incandescent Lamp load 250 V. Max.	Volts	Max. HP	Type	Price	Type	Price	Type	Price	Type	Price
1 Pole Single Phase	0	18	10	115	1	BQ-5	\$25.	BW-15	\$ 60.	BA-5	\$ 37.	BO-5	\$23.
	1	27	15	115	2	CG-5	30.	CW-15	66.	CA-5	42.	CO-5	28.
2 Pole Single Phase	0	18	10	230	1	BQ-1	28.	BW-11	63.	BA-1	40.	BO-1	26.
	1	27	15	230	2	CG-1	33.	CW-11	69.	CA-1	45.	CO-1	31.
	2	45	30	115	3	DG-1	68.	DW-11	140.	DA-1	90.	DO-1	58.
	3	90	60	115	7 $\frac{1}{2}$	EG-1	112.	EW-11	214.	EA-1	138.	EO-1	92.
3 Pole Poly-phase	0	18	10	208-220	3	BQ-2	31.	BW-12	66.	BA-2	43.	BO-2	29.
	1	27	15	208-220	7 $\frac{1}{2}$	CG-2	36.	CW-12	72.	CA-2	48.	CO-2	34.
	2	45	30	208-220	15	DG-2	72.	DW-12	144.	DA-2	94.	DO-2	62.
	3	90	60	208-220	30	EG-2	120.	EW-12	222.	EA-2	146.	EO-2	100.
4 Pole Poly-phase	0	18	10	440-550	5	BQ-3	39.	BW-13	75.	BA-3	51.	BO-3	37.
	1	27	15	440-550	10	CG-3	44.	CW-13	80.	CA-3	56.	CO-3	42.
	2	45	30	220	15	DG-3	90.	DW-13	190.	DA-3	112.	DO-3	80.
	3	90	60	220	30	EG-3	148.	EW-13	278.	EA-3	174.	EO-3	128.

†The holding circuit interlock of the Size 0 and 1, one, two and three pole contactors, has the same rating as the power pole. If this interlock is not required, order contactor with one less pole.

‡Suitable for NEMA Type 3 and 3R applications.



Size 1
Type CO-2



General Purpose
Enclosure
NEMA Type 1

ORDERING INFORMATION REQUIRED

1. Class and type number
2. Line voltage, phase and frequency.
3. Control voltage and frequency if different from line voltage.
4. Special features or modifications. (See page 142 for listing of more common modifications.)



SCHEDULE DS-1 DISCOUNT

PAGE 137

AC MECHANICALLY HELD RELAYS & CONTACTORS

10 AND 15 AMPERES AND SIZES 1 TO 5 — WITHOUT OVERLOAD PROTECTION

CLASS
8508

Mechanically held relays and contactors are used where operating sequence continuity must be maintained regardless of any outside interruptions, such as voltage failures, or where the slight hum of magnetically held devices may be objectionable. Typical applications are for electric furnaces, machine tool circuits, and in hospitals, schools and office buildings.

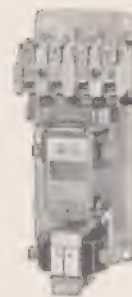
Types A and BH Relays

Addition for Coil Clearing Contacts, Form Y14 ▲

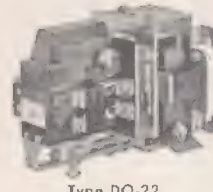
25-60 HERTZ			600 VOLTS MAX.							
No. of Poles *	No. of Poles Initially Open	No. of Poles Initially Closed	10 Amp. — Type A ♦				15 Amp. — Type BH ♦			
			General Purpose Enclosure NEMA Type 1		Open Type		General Purpose Enclosure NEMA Type 1		Open Type	
			Type	Price	Type	Price	Type	Price	Type	Price
2	2	0	AG-20	\$31.	AO-20	\$29.	BHG-20	\$38.	BHO-20	\$35.
	1	1	AG-11	34.	AO-11	32.	BHG-11	41.	BHO-11	38.
	0	2	AG-02	34.	AO-02	32.	BHG-02	41.	BHO-02	38.
3	3	0	AG-30	34.	AO-30	32.	BHG-30	41.	BHO-30	38.
	2	1	AG-21	37.	AO-21	35.	BHG-21	44.	BHO-21	41.
	1	2	AG-12	37.	AO-12	35.	BHG-12	44.	BHO-12	41.
4	4	0	AG-40	36.	AO-40	34.	BHG-40	43.	BHO-40	40.
	3	1	AG-31	39.	AO-31	37.	BHG-31	46.	BHO-31	43.
	2	2	AG-22	39.	AO-22	37.	BHG-22	46.	BHO-22	43.
5	5	0	AG-50	37.	AO-50	35.	BHG-50	44.	BHO-50	41.
	4	1	AG-41	39.	AO-41	37.	BHG-41	46.	BHO-41	43.
	3	2	AG-32	39.	AO-32	37.	BHG-32	46.	BHO-32	43.
6	6	0	AG-60	46.	AO-60	44.	BHG-60	57.	BHO-60	54.
	5	1	AG-51	49.	AO-51	47.	BHG-51	60.	BHO-51	57.
	4	2	AG-42	49.	AO-42	47.	BHG-42	60.	BHO-42	57.
7	7	0	AG-70	49.	AO-70	47.	BHG-70	60.	BHO-70	57.
	6	1	AG-61	51.	AO-61	49.	BHG-61	62.	BHO-61	59.
	5	2	AG-52	51.	AO-52	49.	BHG-52	62.	BHO-52	59.

Device Type or Size	Price per Device
BH	\$ 6.
1 ★	6.
2 ★	8.
3	10.
4	12.
5	12.

▲ Not available on Type A, D or P relays.
★ Form Y14 standard on Type S.



Type BHO-40 Relay



Type DO-22 Relay

*15 Amp. Relays also available with 8 poles. For information consult nearest Square D Field office.
♦ For tungsten lamp load ampere rating: Type A — 5 amperes at 250 Volts max., Type BH — 8 Amperes at 250 Volts max.

Type D Relays

25-60 HERTZ			10 AMPERES 600 VOLTS MAX.							
Description	No. of Contacts Normally Open †	No. of Contacts Normally Closed †	General Purpose Enclosure NEMA Type 1		Open Type		Type	Price	Type	Price
			Type	Price	Type	Price				
2 Pole, Single Throw	2	0	DG-20	\$30.00	DO-20	\$27.00				
2 Pole, Single Throw...	0	2	DG-02	33.00	DO-02	30.00				
2 Pole, Double Throw...	2	2	DG-22	35.00	DO-22	32.00				
4 Pole, Single Throw...	4	0	DG-40	34.00	DO-40	31.00				
4 Pole, 2 Double Throw	4	2	DG-42	41.00	DO-42	37.50				
6 Pole, ...	4	4	DG-44	41.00	DO-44	37.50				
6 Pole, ...	6	0	DG-60	42.00	DO-60	39.00				
8 Pole, ...	6	2	DG-62	50.00	DO-62	47.00				
8 Pole, 2 Double Throw	6	4	DG-64	52.00	DO-64	49.00				
8 Pole, ...	8	0	DG-80	47.00	DO-80	44.00				
8 Pole, 2 Double Throw	8	2	DG-82	56.00	DO-82	55.00				

† Double throw contacts must be used on same polarity.

Type P Relays — Totally Enclosed Contacts

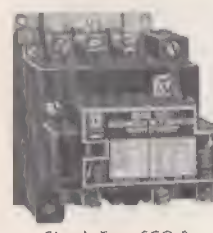
25-60 HERTZ			10 AMPERES ‡ 277 OR 600 VOLTS MAX. ‡							
Description	No. of Contacts Normally Open	No. of Contacts Normally Closed	General Purpose Enclosure NEMA Type 1		Open Type		Type	Price	Type	Price
			Type	Price	Type	Price				
One Pole.	1	1	PG-1	\$35.	PO-1	\$32.				
Two Pole.	2	2	PG-2	38.	PO-2	35.				
Three Pole	3	3	PG-3	41.	PO-3	38.				
Four Pole	4	4	PG-4	44.	PO-4	41.				
Six Pole.	6	6	PG-6	52.	PO-6	49.				
Eight Pole.	8	8	PG-8	58.	PO-8	55.				

‡ See footnotes and electrical ratings for Class 8501 Type P on page 129.

‡ Corresponding types of Class 8501 electrically held relays may also be converted in the field to mechanically held by use of the following Class 8508 attachments: Type M-1 for Type DO relay, or Type M-2 for Type PO relay. Price each \$14.

Contactors

50-60 HERTZ			SIZES 1-5						600 VOLTS MAX.			
No. of Poles	Size	Maximum Ratings						General Purpose Enclosure NEMA Type 1		Open Type		
		AC Ampere Rating ●		Max HP Single Phase		Max HP Polyphase		Type	Price	Type	Price	
		Continuous Current Rating	Incan- descent Lamp Load 250 V. Max.	115 V.	30 V.	220 V.	440- 550 V.					
2	1	27	15	2	3			SCG-2◆ GG-2	\$ 44.	SCD-2◆ GD-2	\$ 42.	
	2	45	30	3	7½			SDG-2◆ DG-2	104.	SDO-2◆ DO-2	96.	
	3	90	60	7½	15			EG-2	146.	EO-	128.	
	4	135	120					FG-1	374.	FO-1	316.	
	5	270	240					GG-1	654.	GO-1	530.	
3	1	27	15			7½	10	SCG-3◆ CG-3	47.	SCD-3◆ CO-3	45.	
	2	45	30			15	25	SDG-3◆ DG-3	108.	SDO-3◆ DO-3	100.	
	3	90	60			30	50	EG-3	154.	EO-3	136.	
	4	135	120			50	100	FG-2	422.	FO-2	342.	
	5	270	240			100	200	GG-2	718.	GO-2	548.	
4	1	27	15			7½	10	SCG-4◆ CG-4	50.	SCD-4◆ CO-4	48.	
	2	45	30			15	25	SDG-4◆ DG-4	128.	SDO-4◆ DO-4	120.	
	3	90	60			30	50	EG-4	184.	EO-4	166.	
	4	135	120			50	100	FG-3	516.	FO-3	436.	
	5	270	240			100	200	GG-3	1164.	GO-3	1010.	



Size 1, Type SCO-3 Contactor

ORDERING INFORMATION REQUIRED

1. Class and type number of device.
2. Voltage and frequency of operating coils.
3. Specify Form Y14 if required.

* Since standard contactors are derated for tungsten lamp loads, Class 8503 Lighting Contactors are recommended for this application.
♦ New design available June, 1970.



AC MAGNETIC STARTERS

LINE VOLTAGE TYPE

WITH MELTING ALLOY OVERLOAD RELAYS

Line voltage magnetic starters are used when full starting torque and the resulting current inrush is not objectionable. Motor overload protection is provided by melting alloy type thermal overload relays. All starters include a N.O. holding circuit interlock as standard. (See page 140 for dimensions.)

CLASS
8536

600 VOLTS MAX.

50-50 HERTZ

No. of Poles	NEMA Size	Maximum Ratings		General Purpose Enclosure NEMA Type 1		General Purpose Enclosure Flush Mounting With Pull Box-plaster adj		Water-tight Enclosure (AISI #304 Stainless Steel, Sizes 0-5) NEMA Type 4		Dust-tight Industrial Use Enclosure NEMA Type 12 (Type 3#)		For Hazardous Locations Class II Groups E, F & G NEMA Type 9		Class I Group C & D NEMA Type 7 Bolted Construction		Open Type		
		Volts	Max. HP	Type	Price*	Type	Price*	Type	Price*	Type	Price*	Type	Price*	Type	Price*	Type	Price*	
																		Poly-phase
2 Pole Single Phase	00	115-230	.....	1 1/3	AG-1	\$ 30.50	.....	.....	Use Size 0		Use Size 0		Use Size 0		Use Size 1		AO-1	\$ 28.50
	0	115-230	.....	1	SBG-1	34.00	SBF-3	\$ 47.	SBW-11▲	\$ 69.	SBA-1▲	\$ 46.	BE-1	\$ 69.	Use Size 1		SBO-1	32.00
	1	115-230	.....	2	SCG-1	39.00	SCF-3	52.	SCW-11▲	75.	SCA-1▲	51.	CE-1	76.	CR-1	\$141.	SCO-1	37.00
	1P	115-230	.....	3	SCG-2	50.00	SCF-6	63.	SCW-12▲	85.	SCA-2▲	62.	CE-2	86.	CR-2	152.	SCO-2	48.00
	2	115-230	.....	5	SDG-6	76.00	SDF-9	93.	SDW-16▲	148.	SDA-6▲	98.	DE-6	182.	DR-6	226.	SDD-6	66.00
	3	115-230	.....	7 1/2	SEG-6	97.00	.....	.....	SEW-16	199.	SEA-6	119.	.....	.....	.....	.....	SED-6	77.00
	00	208-220-440-550	1 1/2	1	AG-2	32.00	.....	.....	Use Size 0		Use Size 0		Use Size 0		Use Size 1		AO-2	30.00
3 Pole Poly-phase	0	110-208-220-440-550	2	1	SBG-2	38.00	SBF-6	52.	SBW-12▲	74.	SBA-2▲	51.	BE-2	74.	Use Size 1		SBO-2	37.00
	1	110-208-220-440-550	3	2	SCG-3	44.00	SCF-9	57.	SCW-13▲	80.	SCA-3▲	56.	CE-3	80.	CR-3	146.	SCO-3	42.00
	2	110-208-220-440-550	5	3	SDG-1	84.00	SDF-3	101.	SDW-11▲	156.	SDA-1▲	106.	DE-1	190.	DR-1	234.	SDD-1	74.00
	3	110-208-220-440-550	7 1/2	5	SEG-1	138.00	.....	.....	SEW-11	240.	SEA-1	164.	EE-1	284.	ER-1	350.	SEO-1	118.00
	4	208-220-440-550	10	7 1/2	FG-1	308.00	.....	.....	FW-11	482.	FA-1	394.	FE-1	556.	.....	FO-1	266.00	
	5	208-220-440-550	15	10	GG-1	684.00	.....	.....	GW-11	904.	GA-1	904.	GE-1	1054.	.....	GO-1	607.00	
	6	208-220-440-550	20	15	HG-2	1962.00	.....	.....	HW-2	2482.	HA-2	2232.	.....	.....	.....	HO-2	1462.00	
	7	208-220-440-550	25	20	JG-1	2629.00	.....	.....	JW-1	3129.	JA-1	2899.	.....	.....	.....	JG-1	2128.00	
	8	208-220-440-550	30	25	KG-1	3677.00	.....	.....	KW-1	4177.	KA-1	3947.	.....	.....	.....	KO-1	3177.00	
4 Pole Poly-Phase	0	220-440-550	3	2	SBG-3	50.00	SBF-9	62.	SBW-13▲	89.	SBA-3▲	62.	BE-3	89.	Use Size 1		SBO-3	47.00
	1	220-440-550	5	3	SCG-4	58.00	SCF-12	68.	SCW-14▲	94.	SCA-4▲	68.	CE-4	94.	CR-4	168.	SCO-4	63.00
	2	220-440-550	10	5	SDG-2	103.00	SDF-6	120.	SDW-12▲	207.	SDA-2▲	125.	DE-2	241.	DR-2	309.	SDD-2	93.00
	3	220-440-550	15	7 1/2	EG-2	168.00	.....	.....	EW-12	298.	EA-2	194.	EE-2	342.	ER-2	446	EO-2	150.00
	4	220-440-550	20	10	FG-2	404.00	.....	.....	FW-12	650.	FA-2	620.	FE-2	750.	.....	FO-2	364.00	
	5	220-440-550	25	12 1/2	GG-2	1200.00	.....	.....	GW-12	1442.	GA-2	1343.	GE-2	1640.	.....	GO-2	1046.00	

▲ Flush plate, pull box and saddle can be purchased separately. Stainless steel flush plates and devices without plaster adjustment for machine cavity mounting available; consult local field office.

* Prices include one overload relay thermal unit for 2 pole starters and two thermal units for 3 and 4 pole starters.

† Deduct \$1.50 each if thermal units are omitted.

‡ Suitable for NEMA Type 3 & 3R applications.

▲ Separate NEMA Type 4 and 12 enclosures available, see Page 210.

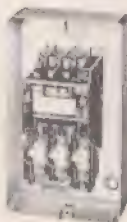
ORDERING INFORMATION REQUIRED

1. Class and type number.
2. Horsepower, voltage, phase, frequency and full load current of motor.
3. Control voltage and frequency if different from line voltage.
4. Select melting alloy thermal units from table 2 on page 218.
5. Special features or modifications required (See page 142 for listing of more common modifications.)

Class 8536
Type SCO-3
Size 1,
3 pole starter
with three
thermal units.



Class 8536
Type SCG 3
Size 1
3 pole starter
with three
thermal units
in NEMA 1 enclosure.



Class 8536
Type S in
NEMA 12
enclosure with
START-STOP
push button
and pilot light.



SCHEDULE DS-1 DISCOUNT

PAGE 139

AC MAGNETIC STARTERS

LINE VOLTAGE TYPE — DIMENSIONS FOR TYPES A, S, F, and G

APPROXIMATE DIMENSIONS AND SHIPPING WEIGHTS

CLASS
8536

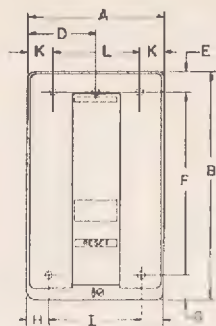


Figure 1 — NEMA Type 1 general purpose enclosure

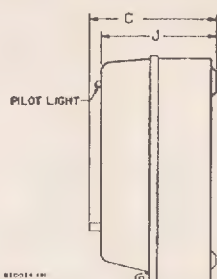


Figure 2 — open type

NEMA 1 ENCLOSURE — FIGURE 1 — SIZE 0-3 TYPE SB, SC, SD AND SE

NEMA Size	Mounting Screws	Dimensions											Wt. (Lbs.)
		A	B	C	D	E	F	G	H	I	J	K	
0, 1 & 1P	(3) #10	6	10	5 1/16	3	7/8	8 1/8	1	1 1/32	4 1/8	5	1 1/2	8
2	(4) 1/4	7 11/16	12 11/16	6 5/16		1 1/2	10 1/2	1 1/2	1 1/2	5 5/8	5 3/4	1 3/2	15 1/2
3	(4) 3/8	11 1/4	21 11/16	8 5/8		1 5/8	18 3/4	1 1/2	1 1/2	8 5/8	7 1/2	1 1/2	37

OPEN TYPE — FIGURE 2 — SIZE 0-3 TYPE SB, SC, SD AND SE

NEMA Size	No. of Poles	Mounting Screws	Dimensions									Wt. (Lbs.)
			A	B	C	D	E	F	G	H	I	
0, 1 & 1P	2 & 3	(3) #10	3 1/2	6 25/32	4 7/16	1 1/2	1	1 1/8	3/4	6 1/4	3 1/2	5
0 & 1	4	(3) #10	4 1/32	6 25/32	4 7/16	1 1/2	1	2 1/2	3/4	6 1/4	3 1/2	5 1/2
2	2 & 3	(3) #10	4 3/16	7 13/16	4 5/16	1 1/2	1	2 5/8	7/8	7 11/16	4 1/16	7 3/4
2	4	(3) #10	5 3/8	7 13/16	4 5/16	1 1/2	1	3 1/16	7/8	7 11/16	4 1/16	9 1/4
3	2 & 3	(3) 1/4	6 5/8	11 1/32	6 1/2	7/8	1 3/4	*	5/8	10 3/16	5 3/4	17

*For size 3, dimension from edge to reset center is 2 23/32. From right edge to top mounting hole, dimension is 3 1/32 or 3/8 left of center

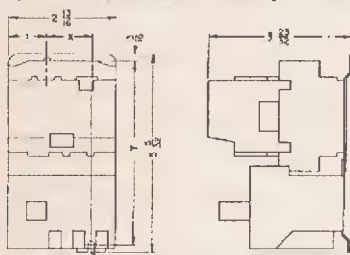


Figure 3
Size 00

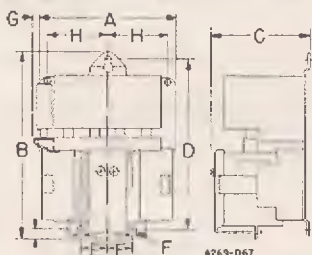


Figure 4
Sizes 3 and 4

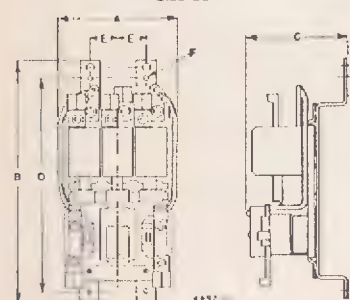


Figure 5
Size 5

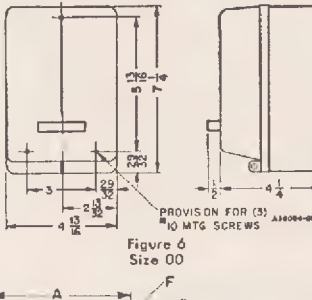


Figure 6
Size 00

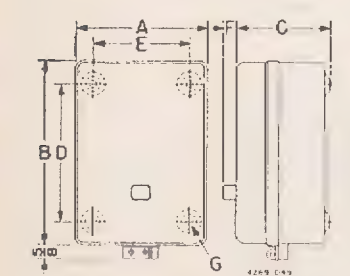


Figure 7
NEMA 1 General Purpose Enclosure
Sizes 3 and 4

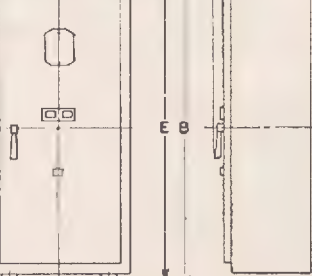


Figure 8
NEMA 1 General Purpose Enclosure
Size 5

OPEN TYPE STARTERS — TYPES A, F, G, H, J, and K

Dimensions	Type A Size 00	Type F Size 4		Type G Size 5		Type H Size 6	Types J & K Size 7 & 8
	Figure 3	Figure 4		Figure 5		Figure 5	Figure 5
	2 or 3 Pole	3 Pole	4 Pole	3 Pole	4 Pole	3 Pole	3 Pole
A		8 1/4	10 3/16	11 1/2	14 1/16	20 1/4	28
B	3 Pole	12 3/8	12 3/8	23 1/16	23 7/16	34 3/8	60
C	X = 1 1/16	6 5/16	6 5/16	9 13/16	9 13/16	8 5/8	14
D	Y = 4 5/16	11	11	20 9/16	20 9/16	33	57
E		2	2	2 3/4	2 3/4	9 3/8	13 1/8
F	2 Pole	7 1/8	7 1/8	9 1/8	9 1/8	7 1/8	9 1/8
G	X = 1 3/4			1 1/8	1 1/8		
H	Y = 2 23/32						
J		2 9/16	2 9/16				
Wt. (Lbs.)	2 1/2	28	34	75	90	120	700

*Starter design is not as shown on the diagram, but dimensions apply.

NEMA 1 ENCLOSURE — TYPES A, F, G, H, J, and K

Dimensions	Type A Size 00	Type F Size 4		Type G Size 5	Type H Size 6	Types J & K Size 7 and 8
	Figure 6	Figure 7		Figure 8	Figure 7	Figure 7
	2 or 3 Pole	3 Pole	4 Pole	3 or 4 Pole	3 Pole	3 Pole
A		14	14 1/4	17 1/4	24	28
B		25	25	39	47	91 1/2
C	See Fig. 6	7 7/8	7 7/8	13 13/16	15 1/2	20
D		22 1/16	22 1/16	13	20	
E		12	12	37	45	
F		1 1/16	1 1/16	1 1/16	1/2	
G		1 1/16	1 1/16			
Wt. (Lbs.)	4 1/2	56	62	105	325	800

*Starter design is not as shown on the diagram, but dimensions apply.



AC MAGNETIC STARTERS

DIMENSIONS — LINE VOLTAGE TYPE

CLASS
8536

CLASS 8536 TYPE S FORM FT (FUSED CONTROL) CIRCUIT TRANSFORMER NEMA 1 GENERAL PURPOSE ENCLOSURE — FIGURE 9

NEMA Size	Type	Form	No. of Poles	Mounting Screws	Dimensions									Weight (Lbs.)
					A	B	C	D	E	F	G	H	I	
0	SBG	FT	2-4	(4) #10	11 $\frac{1}{8}$	11 $\frac{1}{8}$	7 $\frac{1}{2}$	9 $\frac{3}{4}$	1 $\frac{1}{16}$	1 $\frac{1}{16}$	9 $\frac{3}{4}$	11 $\frac{1}{8}$	11 $\frac{1}{8}$	17
1	SCG	FT	2-4	(4) #10	14 $\frac{1}{8}$	14 $\frac{1}{8}$	7 $\frac{1}{2}$	12 $\frac{3}{4}$	1 $\frac{1}{16}$	1 $\frac{1}{16}$	12	11 $\frac{1}{8}$	11 $\frac{1}{8}$	25
2	SDG	FT	2-4	(4) #10	14 $\frac{1}{8}$	14 $\frac{1}{8}$	7 $\frac{1}{2}$	12 $\frac{3}{4}$	1 $\frac{1}{16}$	1 $\frac{1}{16}$	12	11 $\frac{1}{8}$	11 $\frac{1}{8}$	25
3	SEG	FT	2-3	(4) #10	14 $\frac{1}{8}$	14 $\frac{1}{8}$	7 $\frac{1}{2}$	12 $\frac{3}{4}$	1 $\frac{1}{16}$	1 $\frac{1}{16}$	12	11 $\frac{1}{8}$	11 $\frac{1}{8}$	47

Refer to NEMA 1 standard dimensions, Figure 1, Page 140

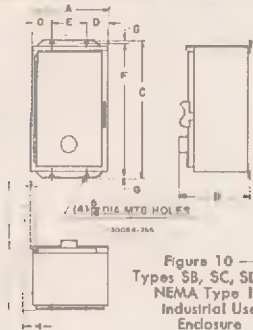


Figure 10 —
Types SB, SC, SD, SE
NEMA Type 12
Industrial Use
Enclosure

APPROXIMATE DIMENSIONS AND SHIPPING WEIGHTS

NEMA Size	Type	No. of Poles	NEMA Type 12 — Figure 10									Wt. Lbs.
			A	B	C	D	E	F	G	H	I	
0	SBA	2-4	6 $\frac{1}{8}$	7 $\frac{1}{8}$	12 $\frac{1}{8}$	1 $\frac{1}{16}$	4 $\frac{1}{8}$	12	$\frac{3}{8}$	2 $\frac{1}{2}$	12 $\frac{1}{4}$	17
2	SDA	2-4	8 $\frac{1}{8}$	8 $\frac{1}{8}$	13 $\frac{1}{8}$	1 $\frac{1}{16}$	4 $\frac{1}{8}$	12 $\frac{1}{2}$	$\frac{3}{8}$	3 $\frac{1}{2}$	14 $\frac{1}{4}$	22
3	SEA	2-3	11 $\frac{1}{8}$	8 $\frac{1}{8}$	20 $\frac{1}{8}$	3 $\frac{1}{16}$	4 $\frac{1}{8}$	19 $\frac{1}{2}$	$\frac{3}{8}$	4 $\frac{1}{2}$	18	45

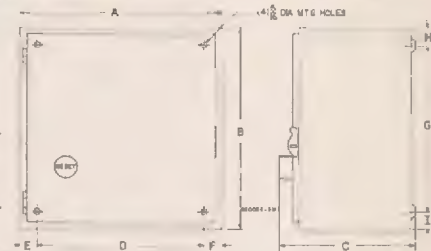


Figure 9
NEMA 1 General Purpose Enclosure
Types SB, SC, SD, Form FT
(Fused Control Circuit Transformer)

TYPES B, C, D AND E — SIZES 0-3 — WITH MELTING ALLOY OVERLOAD RELAYS

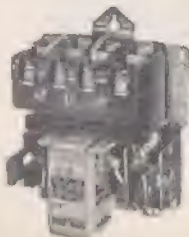
Line voltage magnetic starters are used when full starting torque and the resulting current inrush is not objectionable. Motor overload protection is provided by melting alloy type thermal overload relays. All starters include a N.O. holding circuit interlock as standard.

600 VOLTS MAX.

25-60 HERTZ

No. of Poles	NEMA Size	Maximum Ratings		General Purpose Enclosure NEMA Type 1		Water-tight Enclosure (AISI #304 Stainless Steel) NEMA Type 4		Dust-tight Industrial Use Enclosure NEMA Type 12 (Type 3½)		For Hazardous Locations								Open Type	
		Volts	Max. HP							Class II Groups E, F & G NEMA Type 9		Class I Groups C & D NEMA Type 7 Bolted Construction		SPIN TOP® Class I Groups C & D Class II Groups E, F & G NEMA Type 7 & 9					
										Type	Price *	Type	Price *	Type	Price *	Type	Price *		
2	0	115-230	1-2	BG-1	\$ 34.	BW-11	\$ 69.	BA-1	\$ 46.	BE-1	\$ 69.	Use Size 1		BR-1	\$135.	BO-1	\$ 32.		
	1	115-230	2-3	CG-1	39.	CW-11	75.	CA-1	51.	CE-1	75.	CR-1	\$141.	CR-5	141.	CO-1	37.		
	1P	115-230	3-5	CG-2	50.	CW-12	86.	CA-2	62.	CE-2	86.	CR-2	152.	CR-6	152.	CO-2	45.		
	2	115-230	3-7½	DG-6	76.	DW-16	148.	DA-6	98.	DE-6	152.	DR-6	226.	DR-7	226.	DO-6	66.		
3	0	110-208-220-440-550	2-3-5	BG-2	39.	BW-12	74.	BA-2	51.	BE-2	74.	Use Spin Top		BR-2	140.	BO-2	37.		
	1	110-208-220-440-550	3-7½-10	CG-3	44.	CW-13	80.	CA-3	56.	CE-3	80.	CR-3	146.	CR-7	146.	CO-3	47.		
	2	110-208-220-440-550	7½-15-25	DG-1	84.	DW-11	156.	DA-1	106.	DE-1	190.	DR-1	234.	DR-3	234.	DO-1	74.		
	3	110-208-220-440-550	15-30-50	7½-15	EG-1	138.	EW-11	240.	EA-1	164.	EE-1	284.	ER-1	350.			EO-1	118.	
4	0	220-440-550	3-5-7½	BG-3	55.	BW-13	89.	BA-3	62.	BE-3	89.	Use Size 1		BR-3	151.	BO-3	47.		
	1	220-440-550	5-10-15	CG-4	55.	CW-14	94.	CA-4	68.	CE-4	94.	CR-4	158.	CR-8	158.	CO-4	53.		
	2	220-440-550	15-25-30	DG-2	103.	DW-12	207.	DA-2	125.	DE-2	241.	DR-2	309.			DO-2	93.		
	3	220-440-550	30-50	EG-2	168.	EW-12	298.	EA-2	194.	EE-2	342.	ER-2	446.			EO-2	150.		

*Prices include one thermal unit for 2-pole starters and two thermal units for 3 and 4-pole starters. Deduct \$1.50 each if thermal units are omitted.
†Suitable for NEMA Type 3 and 3R applications.



Type CO-3
Open Type Size 1
Starter

General Purpose
Enclosure
NEMA Type 1



ORDERING INFORMATION REQUIRED

1. Class and type number.
2. Horsepower, voltage, phase, frequency and full load current of motor.
3. Control voltage and frequency if different from line voltage.
4. Select thermal units from table 2 on page 218 (melting alloy).
5. Special features or modifications. (See page 142 for listing of more common modifications.)



AC MAGNETIC STARTERS

LINE VOLTAGE TYPE

WITH BIMETALLIC OVERLOAD RELAYS

CLASS
8536

These line voltage starters are similar in construction and application to those listed on the preceding page, except that they include bimetallic type thermal overload relays for motor protection. All starters include a N.O. holding circuit interlock as standard.



25-60 HERTZ

600 VOLTS MAX.

100 VOLTS MAX.																			
No. of Poles	NEMA Size	Maximum Ratings			General Purpose Enclosure NEMA Type 1	Water-tight Enclosure (AISI #304 Stainless Steel, Sizes 0-5) NEMA Type 4		Dust-tight Industrial Use Enclosure NEMA Type 12 (Type 3+)		For Hazardous Locations								Open Type	
		Volts	Max. HP			Type	* Price	Type	* Price	Type	* Price	Class II Groups E, F & G NEMA Type 9		Class I Group C & D NEMA Type 7 Bolted Construction		SPIN TOP® Class I Groups C & D Class II Groups E, F & G NEMA Types 7 & 8			
			Poly-phase	Single phase								Type	* Price	Type	* Price	Type	* Price	Type	* Price
2	0	115 230		1 2	BAG-1	\$ 34.	BAW-11	\$ 69.	BAA-1	\$ 46.	BAE-1	\$ 69.	Use Size 1		BAR-1	\$135.	BAO-1	\$ 32.	
	1	115 230		2 3	CAG-1	39.	CAW-11	75.	CAA-1	51.	CAE-1	75.	CAR-1	\$141.	CAR-5	141.	CAO-1	37.	
	1P	115 230		3 5	CAG-2	50.	CAW-12	86.	CAA-2	62.	CAE-2	86.	CAR-2	152.	CAR-6	152.	CAO-2	48.	
		115 230		5 7½	DAG-6	76.	DAW-16	148.	DAA-6	98.	DAE-6	182.	DAR-6	226.	DAR-7	226.	DAO-6	66.	
	2	115 230																	
3	0	110 208-220 440-550	2 3 5	1 2	BAG-2	39.	BAW-12	74.	BAA-2	51.	BAE-2	74.	Use Size 1		BAR-2	140.	BAO-2	37.	
	1	110 208-220 440-550	3 7½ 10	2 3	CAG-3	44.	CAW-13	80.	CAA-3	56.	CAE-3	80.	CAR-3	146.	CAR-7	146.	CAO-3	42.	
		110 208-220 440-550	7½ 15 25	3 7½	DAG-1	84.	DAW-11	156.	DAA-1	106.	DAE-1	190.	DAR-1	234.	DAR-3	234.	DAO-1	74.	
	3	110 208-220 440-550	15 30 50	7½ 15	EAG-1	138.	EAW-11	240.	EAA-1	164.	EAE-1	284.	EAR-1	350.	EAR-3	350.	EAO-1	118.	
	4	208-220 440-550	50 100		FAQ-1	308.	FAW-11	482.	FAA-1	394.	FAE-1	556.			FAR-1	563.	FAO-1	266.	
	5	208-220 440-550	100 200		GAG-1	684.	GAW-11	904.	GAA-1	904.	GAE-1	1054.			GAR-1	1268.	GAO-1	607.	
		208-220 440-550	200 400		HAG-2	1962.	HAW-2	2462.	HAA-2	2232.							HAO-2	1462.	
	7	208-220 440-550	300 600		JAG-1	2629.	JAW-1	3129.	JAA-1	2899.							JAO-1	2129.	
	8	208-220 440-550	450 900		KAG-1	3677.	KAW-1	4177.	KAA-1	3947.							KAO-1	3177.	

*Prices include one thermal unit for 2 pole starters and two thermal units for 3 pole starters. Deduct \$1.50 each if thermal units are omitted.

†Suitable for NEMA Type 3 and 3R applications.

•Four pole starters also available. Consult field office.

PRICES FOR ADDITIONS AND SPECIAL FEATURES FOR CLASSES 8502 & 8536 (Listed on Pages 135-137, 139-142)

	Form Letters	Size 00	Sizes 0, 1 & 1P	Size 2	Size 3	Size 4	Size 5	Sizes 6, 7 & 8
Additional thermal units or heaters, each		\$ 1.50	\$ 1.50	\$ 1.50	\$ 1.50	\$ 1.50	\$ 1.50	\$ 1.50
"Start-Stop" push button in cover of NEMA Type 1 enclosure.	Form A	8.00	8.00	8.00	8.00	8.00	8.00	22.00
"Start-Stop" push button in cover of NEMA Type 4, 7, 9 or 12 enclosure	Form A	22.00	22.00	22.00	22.00	22.00	22.00	22.00
"Hand-Off-Auto" selector switch in cover of NEMA Type 1 enclosure.	Form C	8.00	8.00	8.00	8.00	8.00	8.00	8.00
"Hand-Off-Auto" selector switch in cover of NEMA Type 4, 7, 9 or 12 enclosure	Form C	22.00	22.00	22.00	22.00	22.00	22.00	22.00
Pilot light without interlock in cover of NEMA Type 1, 4 and 12 enclosure	Form P▲	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Separate control circuit (specify voltage and frequency)	Form S	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.
†Additional electrical interlocks, each.	Form X	11.00	11.00	11.00	11.00	11.00	11.00	33.00
Control circuit transformer (prices apply only to NEMA Types 1, 4, 9 and 12), 60 cycle, with fuse in low voltage side (No deduction for omission of fuse).	Form FT	27.00	38.00	56.00	68.00	77.00	Inc.	
Additional thermal overload relay with relay unit.	Form J●	1.50	4.00●	4.00●	4.00●	4.00●	4.00●	70.00
Legend plate on enclosure with marking as specified.		1.50	1.50	1.50	1.50	1.50	1.50	1.50
Automatic/hand reset adjustable BIMETALLIC overload relays	★	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.

▲List number of extra normally open and normally closed interlocks required, not including holding circuit interlock.

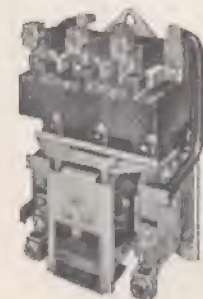
●Not applicable to Type A or S starters, which have provisions for 2 or 3 thermal units as standard. - Add \$1.50 for third thermal unit.

▲Indicate pilot light color as Form P (red) and how pilot light is to be wired. If an interlock in series with the pilot light is required — add \$12.

★For Types B-K, see table at top of page. For Type S, contact your local field office.

ORDERING INFORMATION REQUIRED

1. Class and type number.
2. Horsepower, voltage, phase, frequency and full load current of motor.
3. Control voltage and frequency if different from line voltage.
4. Select thermal units from table 7 on page 223 (bimetallic).
5. Special features or modifications, (See table below).



Size 4
Type FAO-1



AC COMBINATION MAGNETIC STARTERS

WITH DISCONNECT SWITCH

LINE VOLTAGE—WITH MELTING ALLOY TYPE THERMAL OVERLOAD RELAYS

With minor exceptions, the National Electrical Code requires a disconnecting means for every motor. Class 8538 combination starters provide the disconnect switch to meet this requirement and a Class 8536 magnetic starter all in one enclosure. (See page 145 for dimensions.)

CLASS
8538

50-60 HERTZ

3 POLE

600 VOLTS MAX.

Max HP Poly-phase	RATINGS			NEMA Size	General Purpose Enclosure NEMA Type 1		Water-tight Enclosure (AISI #304 Stainless Steel, Sizes 0-5) NEMA Type 4		Dust-tight Industrial Use Enclosure NEMA Type 12 (Type 3½)			For Hazardous Locations Class II, Group E, F & G NEMA Type 9	
	Volts	Fuse Clip Size Amps.	Type		Price*	Type	Price*	Type	Type	Price*	Type	Price*	
3	208-220	None	0	0	SBG-11	\$ 94.	SBW-11	\$ 190.	SBA-21	SBA-11	\$ 118.	DE-1	\$187.
		30	0	0	SBG-12	97.	SBW-12	193.	SBA-22	SBA-12	121.		
	440-550	None	0	0	SBG-11	94.	SBW-11	190.	SBA-21	SBA-11	118.	BE-1	187.
5		30	0	0	SBG-13	99.	SBW-13	195.	SBA-23	SBA-13	123.		
	208-220	None	1	1	SCG-11	99.	SCW-11	195.	SCA-21	SCA-11	123.	CE-1	192.
		30	1	1	SCG-12	102.	SCW-12	198.	SCA-22	SCA-12	126.		
7½		60	1	1	SCG-13	104.	SCW-13	200.	SCA-23	SCA-13	128.		
	440-550	None	0	0	SBG-11	94.	SBW-11	190.	SBA-21	SBA-11	118.	BE-1	187.
		30	0	0	SBG-13	99.	SBW-13	195.	SBA-23	SBA-13	123.		
10	208-220	None	1	1	SCG-11	99.	SCW-11	195.	SCA-21	SCA-11	123.	CE-1	192.
		30	1	1	SCG-12	102.	SCW-12	198.	SCA-22	SCA-12	126.		
		60	1	1	SCG-13	104.	SCW-13	200.	SCA-23	SCA-13	128.		
15	440-550	None	1	1	SCG-11	99.	SCW-11	195.	SCA-21	SCA-11	123.	CE-1	192.
		30	1	1	SCG-14	104.	SCW-14	200.	SCA-24	SCA-14	128.		
		60	1	1	SCG-19	106.	SCW-19	202.	SCA-29	SCA-19	130.		
25	208-220	None	2	2	SDG-11	155.	SDW-11	303.	SDA-21	SDA-11	189.	DE-1	338.
		30	2	2	SDG-12	159.	SDW-12	307.	SDA-22	SDA-12	193.		
		60	2	2	SDG-13	171.	SDW-13	319.	SDA-23	SDA-13	205.		
30	440-550	None	1	1	SCG-11	99.	SCW-11	195.	SCA-21	SCA-11	123.	CE-1	192.
		30	1	1	SCG-14	104.	SCW-14	200.	SCA-24	SCA-14	128.		
		60	1	1	SCG-19	106.	SCW-19	202.	SCA-29	SCA-19	130.		
50	208-220	None	2	2	SDG-11	155.	SDW-11	303.	SDA-21	SDA-11	189.	DE-1	338.
		30	2	2	SDG-12	159.	SDW-12	307.	SDA-22	SDA-12	193.		
		60	2	2	SDG-13	171.	SDW-13	319.	SDA-23	SDA-13	205.		
60	440-550	None	2	2	SDG-11	155.	SDW-11	303.	SDA-21	SDA-11	189.	DE-1	338.
		30	2	2	SDG-12	159.	SDW-12	307.	SDA-22	SDA-12	193.		
		60	2	2	SDG-13	171.	SDW-13	319.	SDA-23	SDA-13	205.		
100	208-220	None	3	3	SEG-11	256.	SEW-11	514.	SEA-21	SEA-11	300.	EE-1	542.
		30	3	3	SEG-12	266.	SEW-12	524.	SEA-22	SEA-12	310.		
		60	3	3	SEG-13	288.	SEW-13	546.	SEA-23	SEA-13	332.		
125	440-550	None	2	2	SDG-11	155.	SDW-11	303.	SDA-21	SDA-11	189.	DE-1	338.
		30	2	2	SDG-12	159.	SDW-12	307.	SDA-22	SDA-12	193.		
		60	2	2	SDG-13	173.	SDW-13	321.	SDA-23	SDA-13	207.		
200	208-220	None	3	3	SEG-11	256.	SEW-11	514.	SEA-21	SEA-11	300.	EE-1	542.
		30	3	3	SEG-12	266.	SEW-12	524.	SEA-22	SEA-12	310.		
		60	3	3	SEG-13	288.	SEW-13	546.	SEA-23	SEA-13	332.		
500	440-550	None	4	4	FG-11	491.	FW-11	821.	FA-21	FA-11	613.	FE-1	860.
		30	4	4	FG-12	508.	FW-12	838.	FA-22	FA-12	630.		
		60	4	4	FG-13	557.	FW-13	887.	FA-23	FA-13	679.		
1000	208-220	None	3	3	SEG-11	256.	SEW-11	514.	SEA-21	SEA-11	300.	EE-1	542.
		30	3	3	SEG-12	271.	SEW-12	529.	SEA-22	SEA-12	315.		
		60	3	3	SEG-13	292.	SEW-13	550.	SEA-23	SEA-13	336.		
2000	440-550	None	4	4	FG-11	491.	FW-11	821.	FA-21	FA-11	613.	FE-1	860.
		30	4	4	FG-12	512.	FW-12	842.	FA-22	FA-12	634.		
		60	4	4	FG-13	565.	FW-13	895.	FA-23	FA-13	687.		
5000	208-220	None	5	5	GG-1	1060.	GW-21	1902.	GA-21	GA-1	1280.		
		30	5	5	GG-2	1195.	GW-22	2037.	GA-22	GA-2	1415.		
		60	5	5	GG-3	1337.	GW-23	2179.	GA-23	GA-3	1516.		
10000	440-550	None	5	5	GG-1	1060.	GW-21	1902.	GA-21	GA-1	1280.		
		30	5	5	GG-2	1096.	GW-22	1938.	GA-22	GA-2	1316.		
		60	5	5	GG-3	1197.	GW-23	2079.	GA-23	GA-3	1316.		
20000	208-220	None	5	5	GG-1	1060.	GW-21	1902.	GA-21	GA-1	1280.		
		30	5	5	GG-2	1096.	GW-22	1938.	GA-22	GA-2	1316.		
		60	5	5	GG-3	1197.	GW-23	2079.	GA-23	GA-3	1457.		

*Prices include two overload relay thermal units. Deduct \$1.50 each if thermal units are omitted.

†HP rating applies only when dual element fuses are used.

‡This rating for standard starting duty only. Fuses not large enough for long time acceleration

§Suitable for NEMA Type 3 and 3R applications.

ORDERING INFORMATION REQUIRED FOR CLASS 8538 AND 8539 DEVICES

1. Class and type number.
2. Quantity and type number of thermal units. Select thermal units from table 3 on page 219.
3. Horsepower, voltage, phase, frequency and full load current of motor.
4. Control voltage and frequency if different from line voltage.
5. Any special features required, see page 153.

Size 1 Starter in NEMA 12 Dust-tight Industrial Use Enclosure



AC COMBINATION STARTERS

WITH CIRCUIT BREAKER

LINE VOLTAGE — WITH MELTING ALLOY TYPE THERMAL OVERLOAD RELAYS

CLASS
8539

With minor exceptions, the National Electrical Code requires a disconnecting means for every motor. Class 8539 combination starters provide a circuit breaker to meet this requirement and a Class 8536 magnetic starter, all in one enclosure. See Page 146 for dimensions.]

50-60 HERTZ

3 POLE

600 VOLTS MAX.

RATINGS					General Purpose Enclosure NEMA Type 1		Water-tight Enclosure (AISI #304 Stainless Steel, Sizes 0-5) NEMA Type 4		Dust-tight Industrial Use Enclosure NEMA Type 12 (Type 30)			For Hazardous Locations			
Max. HP Poly-phase	Volts	NEMA Size	Circuit Breaker						With External Reset	Without External Reset		SPIN TOP® Class I Group C & D Class II Groups E, F & G NEMA Types 7 & 9		Class II Groups E, F & G NEMA Type 9	
			Trip Setting	Type	Type	Price*	Type	Price*	Type	Type	Price*	Type	Price*	Type	Price*
1½-2	208-220 440-550	0	15	FA	SBG-1	\$ 101.	SBW-1	\$ 197.	SBA-11	SBA-1	\$ 125.	BR-11	\$ 224.	BE-1	\$ 205.
		0	15	FA	SBG-2	130.	SBW-2	226.	SBA-12	SBA-2	154.	BR-12	248.	BE-2	234.
3	208-220 440-550	0	20	FA	SBG-3	101.	SBW-3	197.	SBA-13	SBA-3	125.	BR-11	224.	BE-3	205.
		0	15	FA	SBG-2	130.	SBW-2	226.	SBA-12	SBA-2	154.	BR-12	248.	BE-2	234.
5	208-220 440-550	1	30	FA	SCG-1	106.	SCW-1	202.	SCA-11	SCA-1	130.	CR-7	228.	CE-3	210.
		0	15	FA	SCG-2	130.	SCW-2	226.	SCA-12	SCA-2	154.	CR-13	248.	CE-2	234.
7½	208-220 440-550	1	50	FA	SCG-2	106.	SCW-2	202.	SCA-12	SCA-2	130.	CR-7	228.	CE-5	210.
		1	20	FA	SCG-3	135.	SCW-3	231.	SCA-13	SCA-3	159.	CR-9	254.	CE-4	239.
10	208-220 440-550	2	60	FA	SDG-1	161.	SDW-1	309.	SDA-11	SDA-1	195.	DR-12	312.	DE-2	312.
		1	30	FA	SDG-4	135.	SDW-4	231.	SDA-14	SDA-4	159.	DR-14	254.	DE-6	239.
		1	30	FA	SDG-4	135.	SDW-4	231.	SDA-14	SDA-4	159.	CR-9	254.	CE-4	239.
15	208-220 440-550	2	90	FA	SDG-2	161.	SDW-2	309.	SDA-12	SDA-2	195.	DR-20	312.	DE-10	312.
		2	40	FA	SDG-3	190.	SDW-3	338.	SDA-13	SDA-3	224.	DR-21	338.	DE-5	338.
		2	40	FA	SDG-3	190.	SDW-3	338.	SDA-13	SDA-3	224.	DR-21	338.	DE-6	338.
20	208-220 440-550	3	100	FA	SEG-1	275.	SEW-1	533.	SEA-11	SEA-1	319.	ER-10	557.	EE-1	557.
		2	60	FA	SDG-4	190.	SDW-4	338.	SEA-14	SEA-4	224.	DR-22	338.	DE-7	338.
		2	40	FA	SDG-3	190.	SDW-3	338.	SEA-13	SEA-3	224.	DR-21	338.	DE-8	338.
25	208-220 440-550	3	100	FA	SEG-1	275.	SEW-1	533.	SEA-11	SEA-1	319.	ER-10	557.	EE-2	557.
		2	70	FA	SDG-5	190.	SDW-5	338.	SEA-15	SEA-5	224.	DR-22	338.	DE-7	338.
		2	60	FA	SDG-4	190.	SDW-4	338.	SEA-14	SEA-4	224.	DR-22	338.	DE-9	338.
30	208-220 440-550	3	125	KA	SEG-2	275.	SEW-2	533.	SEA-12	SEA-2	319.	ER-19	557.	EE-9	557.
		3	70	FA	SEG-3	275.	SEW-3	533.	SEA-13	SEA-3	319.	ER-20	557.	EE-5	557.
		3	60	FA	SEG-4	275.	SEW-4	533.	SEA-14	SEA-4	319.	ER-20	557.	EE-4	557.
40	208-220 440-550	4	175	ML-3	FG-1	600.	FW-11	930.	FA-21	FA-1	722.	FR-9	866.	FE-1	866.
		3	100	FA	SEG-1	275.	SEW-1	533.	SEA-11	SEA-1	319.	ER-21	557.	EE-5	557.
		3	90	FA	SEG-3	275.	SEW-3	533.	SEA-13	SEA-3	319.	ER-20	557.	EE-6	557.
50	208-220 440-550	4	200	ML-3	FG-12	600.	FW-12	930.	FA-22	FA-2	722.	FR-9	866.	FE-2	866.
		3	100	FA	SEG-1	275.	SEW-1	533.	SEA-11	SEA-1	319.	ER-21	557.	EE-7	557.
		3	100	FA	SEG-1	275.	SEW-1	533.	SEA-11	SEA-1	319.	ER-21	557.	EE-8	557.
60	208-220 440-550	5	225	LA	GG-1	1349.	GW-11	2191.	GA-11	GA-1	1569.	GR-21	1843.	GE-1	1843.
		4	125	ML-3	FG-13	600.	FW-13	930.	FA-23	FA-13	722.	FR-17	866.	FE-3	866.
		4	100	ML-3	FG-14	600.	FW-14	930.	FA-24	FA-14	722.	FR-17	866.	FE-4	866.
75	208-220 440-550	5	300	LA	GG-2	1349.	GW-12	2191.	GA-12	GA-2	1569.	GR-21	1843.	GE-2	1843.
		4	150	ML-3	FG-15	600.	FW-15	930.	FA-25	FA-15	722.	FR-18	866.	FE-5	866.
		4	125	ML-3	FG-16	600.	FW-16	930.	FA-26	FA-16	722.	FR-17	866.	FE-6	866.
100	208-220 440-550	5	400	LA	GG-3	1349.	GW-13	2191.	GA-13	GA-3	1569.	GR-22	1843.	GE-3	1843.
		4	200	ML-3	FG-17	600.	FW-17	930.	FA-27	FA-17	722.	FR-18	866.	FE-7	866.
		4	150	ML-3	FG-18	600.	FW-18	930.	FA-28	FA-18	722.	FR-18	866.	FE-8	866.
125	208-220 440-550	6	▲	MA	HG-1	2941.	HW-1	3441.	GA-14	GA-4	3211.	GR-23	1843.	GE-4	1843.
		5	250	LA	GG-4	1349.	GW-14	2191.	GA-15	GA-5	1569.	GR-23	1843.	GE-5	1843.
		5	200	LA	GG-5	1349.	GW-15	2191.	GA-15	GA-5	1569.	GR-23	1843.	GE-5	1843.
150	208-220 440-550	6	▲	MA	HG-1	2941.	HW-1	3441.	GA-16	GA-6	3211.	GR-24	1843.	GE-6	1843.
		5	300	LA	GG-6	1349.	GW-16	2191.	GA-17	GA-7	1569.	GR-24	1843.	GE-7	1843.
		5	225	LA	GG-7	1349.	GW-17	2191.	GA-17	GA-7	1569.	GR-24	1843.	GE-7	1843.
200	208-220 440-550	6	▲	MA	HG-1	2941.	HW-1	3441.	GA-18	GA-8	3211.	GR-22	1843.	GE-8	1843.
		5	400	LA	GG-8	1349.	GW-18	2191.	GA-19	GA-9	1569.	GR-25	1843.	GE-9	1843.
		5	300	LA	GG-9	1349.	GW-19	2191.	GA-19	GA-9	1569.	GR-25	1843.	GE-9	1843.
300	208-220	7	▲	MA	JG-1	3995.	JW-1	4495.		JA-1	4265.				
400	440-550	6	▲	MA	HG-1	2941.	HW-1	3441.		HA-1	3211.				
600	440-550	7	▲	MA	JG-1	3995.	JW-1	4495.		JA-1	4256.				
900	440-550	8	▲	PA	KG-1	5977.	KW-1	6477.		KA-1	6247.				

*Prices include two overload relay thermal units. Deduct \$1.50 each if thermal units are omitted.

▲Refer to factory, giving motor horsepower, full load current, and locked rotor current or KVA, to select proper breaker trip and setting. These devices utilize magnetic only trip circuit breakers. Manufactured by HI Division.

‡For starters of 1½ hp or less in SPIN TOP enclosures, refer to the nearest Square D field office for Type designation. Price the same as the 2 hp starter.

†Suitable for NEMA Type 3 and 3R applications.

●Trip settings and frame sizes shown do not apply to NEMA 7-9 devices. Contact your nearest Square D field office for more information.

See page 143 for ordering instructions.



AC COMBINATION MAGNETIC STARTERS

DIMENSIONS

CLASS
8538
8539

APPROXIMATE DIMENSIONS AND SHIPPING WEIGHTS
NEMA 1 AND 12 ENCLOSURES WITH OR WITHOUT CONTROL TRANSFORMER

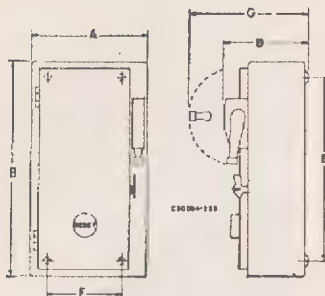


Figure 1 - NEMA Type 1
General Purpose Enclosure

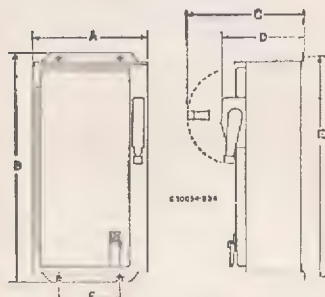


Figure 2 - NEMA Type 12,
Dust-tight Industrial Use Enclosure

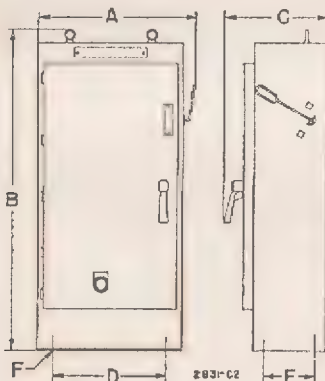


Figure 3

CLASS 8538 — NEMA 1 ENCLOSURE SIZE 5

Size	Dim.	Figure 3
		GG-1, 3 GG-2, 4
5	A	29 1/4
	B	71
	C	19 1/2
	D	24
	E	11 1/2
	F	11 1/2
	Wt. (Lbs.)	580

CLASS 8538 — NEMA 12 ENCLOSURE SIZE 5

Size	Dim.	Figure 3
		GA-1, -3, -21 & -23 GA-2, -4, -22 & -24
5	A	29 1/4
	B	71
	C	19 1/2
	D	23 3/4
	E	12 1/2
	F	11 1/2
	Wt. (Lbs.)	620

NEMA 1 ENCLOSURE — FIGURE 1

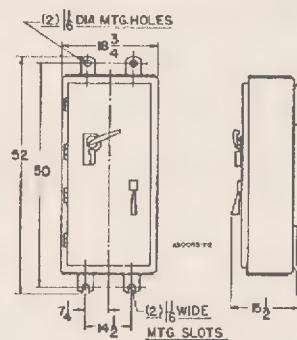
NEMA Size	Class	Type	Mounting Screws	Dimensions						Wt. (Lbs.)
				A	B	C	D	E	F	
0-1	8539 (E Frame)	SBG SCG	(4) 1/4"	9 5/8	19	12 1/2	8 1/2	16 7/8	6 3/8	35
	8538 & 8539 (F Frame)	SBG SCG	(4) 1/4"	9 5/8	21 5/8	12 1/2	8 1/2	19 1/2	6 3/8	38
2	8539 (E Frame)	SDG	(4) 1/4"	9 7/8	20 3/4	13 1/2	9 1/2	18 5/8	6 3/8	52
	8538 & 8539 (F Frame)	SDG	(4) 1/4"	10 5/8	21 1/8	13 1/2	9 1/2	23	7 3/8	54
3	8538 & 8539	SEG	(4) 3/8"	15 1/2	33 1/2	16 1/8	10 1/2	31	11 7/8	111

NEMA 12 ENCLOSURE — FIGURE 2

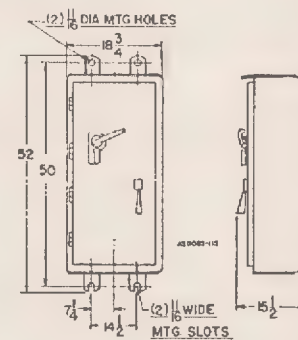
NEMA Size	Class	Type	Mounting Screws	Dimensions						Wt. (Lbs.)
				A	B	C	D	E	F	
0-1	8539 (E Frame)	SBA SCA	(4) 1/4"	9 5/8	20 5/8	12 1/2	8 1/2	19 7/8	4 1/4	37
	8538 & 8539 (F Frame)	SBA SCA	(4) 1/4"	9 5/8	23 1/4	12 1/2	8 1/2	22 1/2	4 1/4	40
2	8539 (E Frame)	SDA	(4) 1/4"	9 7/8	22 3/8	13 1/2	9 1/2	21 5/8	4 1/4	53
	8538 & 8539 (F Frame)	SDA	(4) 1/4"	10 5/8	26 3/4	13 1/2	9 1/2	26	4 1/4	55
3	8538 & 8539	SEA	(4) 3/8"	15 1/2	36	16 1/2	10 1/2	35	9	111

NEMA Size	Dimension	CLASS 8538				CLASS 8539	
		NEMA 1 Figure 1		NEMA 12 Figure 2		NEMA 1 Figure 1	NEMA 12 Figure 2
		FG-11	FG12-15	FA-21, 11	FA22-25 FA12-15	FG11-18	FA11-18
4	A	16 1/16	16 1/16	16 1/16	16 1/16	14 1/2	14 1/16
	B	30 3/16	41 3/16	32 7/16	43 7/16	31 3/16	33 7/16
	C	18 3/2	18 3/2	18	18	14 1/2	14 1/2
	D	12 1/16	12 1/16	12 9/16	12 9/16	10 5/8	10 5/8
	E	27 1/2	38 1/2	31 3/8	42 3/8	28 1/2	32 3/8
	F	12 3/4	12 3/4	13 1/2	13 1/2	11 1/8	11 1/2
	Wt. (Lbs.)	130	150	140	160	120	130

Mounting screws — use (4) 3/8"



Class 8539
Type GG-1 thru -9
Weight — 420



Class 8539
Type GA-1 thru -9
Weight — 440



REDUCED VOLTAGE STARTERS

AC PRIMARY RESISTOR TYPE

CLASS
8547
8549

Class 8547 (non-reversing) or Class 8549 (reversing) primary resistor starters should be used when squirrel cage motors must be started with limited current inrush to avoid power line disturbances, or with limited torque to prevent damage to driven machinery. Standard starters are furnished with NEMA Class 116 resistors (one 5 second start each 80 seconds) and two melting alloy type overload relays (Types C-K).

25-60 HERTZ

600 VOLTS MAX.

No. of Poles	Max. HP	Volts	Class 8547, Non-Reversing				Class 8549, Reversing			
			General Purpose Enclosure NEMA Type 1		Industrial Use Dust-tight Enclosure NEMA Type 12		General Purpose Enclosure NEMA Type 1		Industrial Use Dust-tight Enclosure NEMA Type 12	
			Type	Price *	Type	Price *	Type	Price *	Type	Price *
3 Pole, Three Phase	5	208-220 440-550	CG-3	\$ 286.	GD-3	\$ 436.	CG-1	\$ 430.	CD-1	\$ 580.
	7½	208-220 440-550	CG-5	296.	CD-5	446.	CG-2	440.	CD-2	590.
				CG-3	296.	CD-3	446.	CG-1	440.	CD-1	590.
	10	208-220 440-550	DG-2	420.	DD-2	600.	DG-1	814.	DD-1	994.
				CG-5	316.	CD-5	466.	CG-2	460.	CD-2	610.
	15	208-220 440-550	DG-2	450.	DD-2	630.	DG-1	844.	DD-1	1024.
		20	208-220 440-550	EG-2	600.	ED-2	790.	EG-1	1016.	ED-1	1206.
				DG-2	484.	DD-2	664.	DG-1	878.	DD-1	1058.
	25	208-220 440-550	EG-2	610.	ED-2	800.	EG-1	1026.	ED-1	1216.
				DG-2	504.	DD-2	684.	DG-1	898.	DD-1	1078.
	30	208-220 440-550	EG-2	638.	ED-2	828.	EG-1	1054.	ED-1	1244.
		40	208-220 440-550	FG-1	1296.	FD-1	1536.	FG-1	2198.	FD-1	2438.
				EG-2	662.	ED-2	852.	EG-1	1078.	ED-1	1268.
	50	208-220 440-550	FG-1	1296.	FD-1	1536.	FG-1	2198.	FD-1	2438.
				EG-2	684.	ED-2	874.	EG-1	1100.	ED-1	1290.
	75	208-220 440-550	GG-1	2022.	GD-1	2292.	GG-1	3100.	GD-1	3370.
				FG-1	1320.	FD-1	1560.	FG-1	2222.	FD-1	2462.
	100	208-220 440-550	GG-1	2178.	GD-1	2448.	GG-1	3256.	GD-1	3526.
				FG-1	1320.	FD-1	1560.	FG-1	2222.	FD-1	2462.
	125	208-220 440-550	HG-1	3740.	HA-1	4115.	GG-1	3172.	GD-1	3442.
			GG-1	2094.	GD-1	2364.	GG-1	3172.	GD-1	3442.
150	208-220 440-550	HG-1	3902.	HA-1	4277.	GG-1	3172.	GD-1	3442.	
			GG-1	2094.	GD-1	2364.	GG-1	3172.	GD-1	3442.
200	208-220 440-550	HG-1	4044.	HA-1	4419.	GG-1	3172.	GD-1	3442.	
			GG-1	2372.	GD-1	2642.	GG-1	3450.	GD-1	3720.
250	208-220 440-550	JG-1	6212.	JA-1	6712.	GG-1	3450.	GD-1	3720.	
			HG-1	3934.	HA-1	4309.	GG-1	3450.	GD-1	3720.
300	208-220 440-550	JG-1	6425.	JA-1	6925.	GG-1	3450.	GD-1	3720.	
			HG-1	4166.	HA-1	4541.	GG-1	3450.	GD-1	3720.
400	208-220 440-550	KG-1	8521.	KA-1	9081.	GG-1	3450.	GD-1	3720.	
			HG-1	4288.	HA-1	4683.	GG-1	3450.	GD-1	3720.
500	440-550	JG-1	6730.	JA-1	7230.	GG-1	3450.	GD-1	3720.	
			JG-1	6892.	JA-1	7392.	GG-1	3450.	GD-1	3720.
700	440-550	KG-1	9357.	KA-1	8732.	GG-1	3450.	GD-1	3720.	
			KG-1	9691.	KA	10066.	GG-1	3450.	GD-1	3720.
800	440-550	KG-1	9691.	KA	10066.	GG-1	3450.	GD-1	3720.	
			KG-1	10042.	KA	10417.	GG-1	3450.	GD-1	3720.
900	440-550	KG-1	10042.	KA	10417.	GG-1	3450.	GD-1	3720.	
			KG-1	10417.	KA	10868.	GG-1	3450.	GD-1	3720.

REDUCED VOLTAGE STARTERS

CLOSED TRANSITION AUTO-TRANSFORMER TYPE

Class 8606 Autotransformer type starters apply a reduced voltage across the terminals of a squirrel cage motor during the acceleration period. These starters provide the most torque per ampere of line current during starting, because of the transformer effect, making them ideal for applications where high current inrush may cause line disturbances. Standard starters are supplied with two melting alloy overload relays (Types D-K).

CLASS
8606

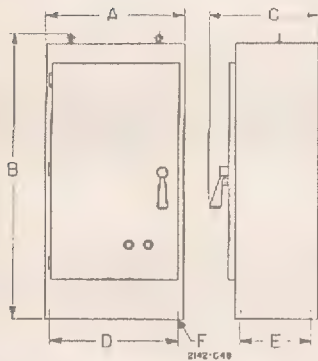
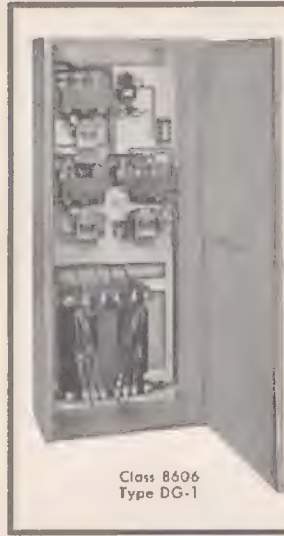


Figure 1
NEMA 1, Floor Mounting Enclosure

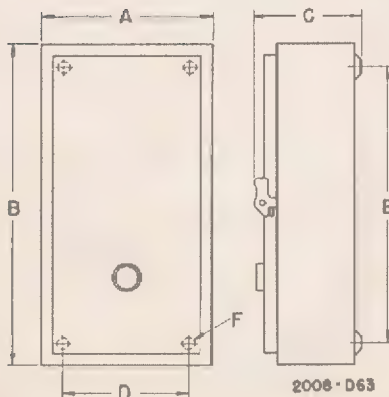


Figure 2
NEMA 1, Wall Mounting Enclosure

25-60 HERTZ			THREE PHASE				600 VOLTS MAX.			
Max. HP Ratings	Volts	Hertz	General Purpose Enclosure NEMA Type 1		Water-tight Enclosure NEMA Type 4		Dust-tight Industrial Use Enclosure NEMA Type 12‡		For Hazardous Locations Class II Groups E, F and G NEMA Type 9	
			Type	Price*	Type	Price*	Type	Price*	Type	Price*
15	208-220 440-550	50-60	DG-1	\$ 570.	DW-1	\$ 880.	DA-1	\$ 750.	DE-1	\$ 880.
	208-220 440-550	25	DG-1	598.	DW-1	908.	DA-1	778.	DE-1	908.
25	208-220 440-550	50-60	EG-1	670.	EW-1	980.	EA-1	860.	EE-1	980.
	208-220 440-550	25	EG-1	570.	EW-1	880.	EA-1	750.	EE-1	880.
30	208-220 440-550	50-60	EG-1	698.	EW-1	1008.	EA-1	888.	EE-1	1008.
	208-220 440-550	25	EG-1	598.	EW-1	908.	EA-1	778.	EE-1	908.
50	208-220 440-550	50-60	FG-1	1296.	FW-1	1866.	FA-1	1536.	FE-1	1866.
	208-220 440-550	25	FG-1	722.	FW-1	1032.	FA-1	912.	FE-1	1032.
75	208-220 440-550	50-60	GG-1	2022.	GW-1	2592.	GA-1	2292.	GE-1	2592.
	208-220 440-550	25	GG-1	1320.	GW-1	1890.	GA-1	1560.	GE-1	1890.
100	208-220 440-550	50-60	HG-1	3740.	HW-1	4490.	HA-1	4115.	HE-1	4490.
	208-220 440-550	25	HG-1	2994.	HW-1	2664.	HA-1	2364.	HE-1	2664.
125	208-220 440-550	50-60	IG-1	4044.	IW-1	4794.	IA-1	4419.	IE-1	4794.
	208-220 440-550	25	IG-1	2372.	IW-1	2942.	IA-1	2642.	IE-1	2942.
150	208-220 440-550	50-60	JG-1	6212.	JW-1	6962.	JA-1	6587.	JE-1	6962.
	208-220 440-550	25	JG-1	3934.	JW-1	4684.	JA-1	4309.	JE-1	4684.
200	208-220 440-550	50-60	KG-1	8521.	KW-1	9271.	KA-1	8521.	KE-1	9271.
	208-220 440-550	25	KG-1	4288.	KW-1	5038.	KA-1	4663.	KE-1	5038.
250	208-220 440-550	50-60	LG-1	9081.	LW-1	9831.	LA-1	9081.	LE-1	9831.
	208-220 440-550	25	LG-1	6730.	LW-1	7480.	LA-1	7105.	LE-1	7480.
300	208-220 440-550	50-60	MG-1	12112.	MW-1	13862.	MA-1	12587.	ME-1	13862.
	208-220 440-550	25	MG-1	7334.	MW-1	8084.	MA-1	7309.	ME-1	8084.
400	208-220 440-550	50-60	NG-1	16212.	NW-1	18962.	NA-1	17187.	NE-1	18962.
	208-220 440-550	25	NG-1	9334.	NW-1	10084.	NA-1	9309.	NE-1	10084.
500	208-220 440-550	50-60	OG-1	20212.	OW-1	23962.	OA-1	21587.	OE-1	23962.
	208-220 440-550	25	OG-1	12334.	OW-1	13084.	OA-1	12309.	OE-1	13084.
600	208-220 440-550	50-60	PG-1	24212.	PW-1	28962.	PA-1	26187.	PE-1	28962.
	208-220 440-550	25	PG-1	14334.	PW-1	15084.	PA-1	14309.	PE-1	15084.
700	208-220 440-550	50-60	QG-1	28212.	QW-1	32962.	QA-1	30187.	QE-1	32962.
	208-220 440-550	25	QG-1	16334.	QW-1	17084.	QA-1	16309.	QE-1	17084.
800	208-220 440-550	50-60	RG-1	32212.	RW-1	37962.	RA-1	34187.	RE-1	37962.
	208-220 440-550	25	RG-1	18334.	RW-1	19084.	RA-1	18309.	RE-1	19084.
900	208-220 440-550	50-60	SG-1	36212.	SW-1	41962.	SA-1	38187.	SE-1	41962.
	208-220 440-550	25	SG-1	20334.	SW-1	21084.	SA-1	20309.	SE-1	21084.

*Prices include two overload relay thermal units. Deduct \$1.50 each if thermal units are omitted.
‡Suitable for NEMA 3 and NEMA 3R applications.

ORDERING INFORMATION REQUIRED

1. Class and type number
2. Horsepower, voltage, phase, frequency and full load current of motor.
3. Control voltage and frequency if different from line voltage.
4. Select thermal units from Table 3, page 219, for Types D-K.
5. Any special features required.

APPROXIMATE DIMENSIONS AND SHIPPING WEIGHTS

GENERAL PURPOSE ENCLOSURES							NEMA TYPE 1						
Dimension Symbol	Class 8606						Class 8640 (Listed on Page 143)						
	Wall Mtg. Fig. 2		Floor Mtg. Fig. 1				Wall Mounting Fig. 2				Floor Mtg. Fig. 1		
	Type DG-1	Type EG-1	Type FG-1	Type GG-1	Type HG-1	Type JG-1 & KG-1	Type CG-1	Type DG-1	Type EG-1	Type FG-1	Type GG-1	Type HG-1	Type JG-1 & KG-1
	18 1/16	23 1/4	26 1/4	28 1/4	32	56	14 1/16	16 1/4	19 1/16	26 1/4	28 1/4	32	56
A	44 1/16	51 1/2	70 1/2	82 1/2	91 1/2	91 1/2	18 1/16	24 1/4	29 1/16	35 1/16	58	91 1/2	91 1/2
B	13 1/2	14 3/16	19 1/2	19 1/2	20	20	6 1/4	8 3/16	8 3/16	16 1/4	20	20	20
C	13	16	..	..	..	..	12	14	16 1/2	16 1/2	22	..	..
D	41 1/2	47	..	..	..	..	16	22	26 1/2	32 1/2	56	..	..
E	1 1/16	1 1/16	..	..	..	..	1/16	1/16	1/16	1/16	1 1/16	..	..
F	..	..	..	..	..	..	..	..	..	..	..	..	..
Wt. (lbs.)	275	350	625	850	1300	2150	35	65	120	150	250	750	1050



REDUCED VOLTAGE STARTERS

WYE-DELTA AND PART WINDING TYPES

WYE-DELTA MOTOR STARTERS

Class 8630 Wye-Delta starters may only be used with Wye-Delta (6 lead) motors. These starters connect the motor windings in wye (for starting) and then in delta (for running). Starting torque and inrush current in wye are 1/3 of their value for a line voltage, delta connected start. Standard starters, Sizes 1YD-8YD utilize three melting alloy overload relays.

CLASS
8630

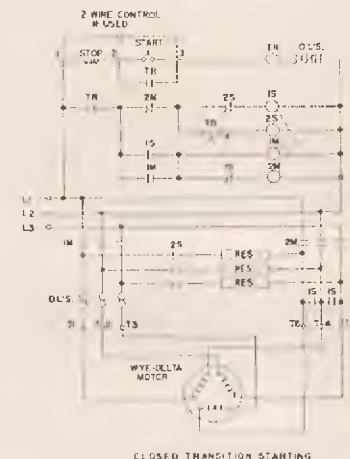
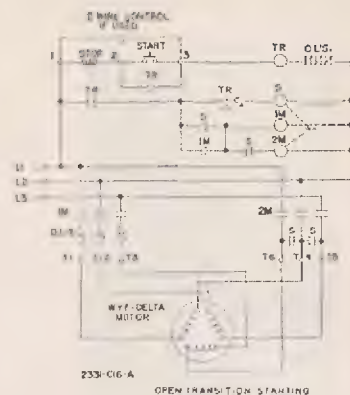
25-60 HERTZ

600 VOLTS MAX.

Max. H.P.	Voltage	NEMA Size	Open Transition Starting						Closed Transition Starting					
			General Purpose Enclosure NEMA Type 1		Water-tight Enclosure NEMA Type 4		Dust-tight Industrial Use Enclosure NEMA Type 12		General Purpose Enclosure NEMA Type 1		Water-tight Enclosure NEMA Type 4		Dust-tight Industrial Use Enclosure NEMA Type 12	
			Type	Price*	Type	Price*	Type	Price*	Type	Price*	Type	Price*	Type	Price*
10	208-220 440-550	1 YD	CG-5	\$ 348.	CW-5	\$ 468.	CA-5	\$ 448.	CG-6	\$ 529.	CW-6	\$ 649.	CA-6	\$ 629.
15	208-220 440-550	2 YD	DG-5	411.	DW-5	546.	DA-5	536.	DG-6	592.	DW-6	727.	DA-6	717.
25	208-220 440-550	3 YD	EG-5	411.	EW-5	546.	EA-5	536.	EG-6	592.	EW-6	727.	EA-6	717.
30	208-220 440-550	4 YD	FG-5	411.	FW-5	546.	FA-5	536.	FG-6	592.	FW-6	727.	FA-6	717.
40	208-220 440-550	5 YD	GG-5	596.	GW-5	791.	GA-5	746.	GG-6	824.	GW-6	1019.	GA-6	974.
50	208-220 440-550	6 YD	HG-5	596.	HW-5	791.	HA-5	746.	HG-6	824.	HW-6	1019.	HA-6	974.
60	208-220 440-550	7 YD	JG-5	596.	JW-5	791.	JA-5	746.	JG-6	824.	JW-6	1019.	JA-6	974.
75	208-220 440-550	8 YD	KG-5	1238.	KW-5	1546.	KA-5	1438.	KG-6	1671.	KW-6	1818.	KA-6	1771.
100	208-220 440-550	9 YD	LG-5	596.	LW-5	791.	LA-5	746.	LG-6	824.	LW-6	1019.	LA-6	974.
150	208-220 440-550	12 YD	MG-5	2222.	MW-5	2792.	MA-5	2492.	MG-6	2698.	MW-6	3268.	MA-6	2988.
250	208-220 440-550	16 YD	NG-5	1238.	NW-5	1546.	NA-5	1438.	NG-6	1671.	NW-6	1818.	NA-6	1771.
300	208-220 440-550	18 YD	OG-5	2222.	OW-5	2792.	OA-5	2492.	OG-6	2698.	OW-6	3268.	OA-6	2988.
350	208-220 440-550	20 YD	PG-5	4750.	PW-5	5500.	PA-5	5125.	PG-6	5974.	PW-6	6724.	PA-6	6348.
500	208-220 440-550	30 YD	RG-5	4750.	RW-5	5500.	RA-5	5125.	RG-6	5974.	RW-6	6724.	RA-6	6348.
600	208-220 440-550	36 YD	SG-5	4750.	SW-5	5500.	SA-5	5125.	SG-6	5974.	SW-6	6724.	SA-6	6348.
700	208-220 440-550	42 YD	TG-5	8882.	TW-5	9612.	TA-5	9237.	TG-6	11218.	TW-6	11968.	TA-6	11593.
750	208-220 440-550	48 YD	UG-5	4750.	UW-5	5500.	UA-5	5125.	UG-6	5974.	UW-6	6724.	UA-6	6348.
1000	440-550	72 YD	VG-5	8882.	VW-5	9612.	VA-5	9237.	VG-6	11218.	VW-6	11968.	VA-6	11593.
1300	440-550	96 YD	WG-5	6405.	WV-5	7155.	WA-5	6780.	WG-6	8304.	WV-6	9054.	WA-6	8679.
1500	440-550	108 YD	XG-5	8882.	XW-5	9612.	XA-5	9237.	XG-6	11218.	XW-6	11968.	XA-6	11593.

*Prices include three overload relay thermal units. Deduct \$1.50 each if thermal units are omitted. To select thermal units: divide the delta connected motor full load current by 1.73, then use this value to select thermal units from table 3 on page 219.

†Suitable for NEMA 3 and NEMA 3R applications.



PART WINDING MOTOR STARTERS

Part winding starters are used with motors having two sets of windings, and which are suitable for starting with only one set of windings energized.

CLASS
8640

25-60 HERTZ

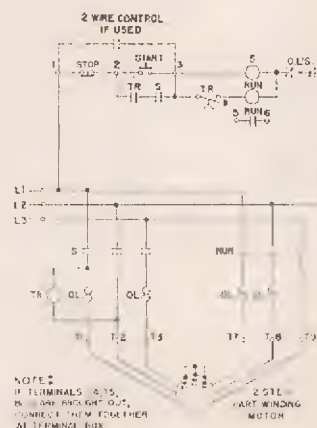
TWO STEP PART WINDING MOTOR STARTER

600 VOLTS MAX.

No. of Poles	NEMA Size	Max. HP Polyphase		General Purpose Enclosure NEMA Type 1		Water-tight Enclosure NEMA Type 4		Dust-tight Industrial Use Enclosure NEMA Type 12		For Hazardous Locations, Class I Group D NEMA Type 7	
		208-220 Volts	440-550 Volts	Type	Price*	Type	Price*	Type	Price*	Type	Price*
3 Pole Three Phase	1PW	15	20	CG-1	\$ 225.	CW-1	\$ 345.	CD-1	\$ 325.	CR-1	\$ 455.
	2PW	30	50	DG-1	318.	DW-1	453.	DD-1	443.	DR-1	660.
	3PW	60	100	EG-1	446.	EW-1	641.	ED-1	595.	ER-1	1008.
	4PW	100	200	FG-1	947.	FW-1	1254.	FD-1	1147.	FR-1	2130.
	5PW	200	400	GG-1	1900.	GW-1	2470.	GD-1	2170.		
	6PW	400	800	HG-1	4127.	HW-1	4734.	HA-1	4627.		
	7PW	600	1200	JG-1	6165.	JW-1	6818.	JA-1	6765.		

*Prices include four overload relay thermal units. Deduct \$1.50 each if thermal units are omitted. Select thermal units based on full load current of each motor winding, from table 3 on pages 219-220.

†Suitable for NEMA 3 and NEMA 3R applications.



AC REVERSING MAGNETIC CONTACTORS

WITHOUT OVERLOAD PROTECTION

Reversing magnetic contactors are used to start, stop and reverse ac squirrel cage motors where overload protection is not needed or is provided separately. All reversing contactors are supplied with an electrical and mechanical interlock except Size 00 which has a mechanical interlock only. (See page 151 for dimensions).

CLASS
8702

50-60 HERTZ

600 VOLTS MAX.



Class 8702, Type SCO-8
Size 1, 3 Pole Reversing Contactor



Size 2, Reversing Contactor, 3 Pole



NEMA Type 1 General Purpose
Enclosure

No. of Poles	NEMA Size	Ratings		Type of Motor	General Purpose Enclosure NEMA Type 1		Water-tight (AISI, #304 Stainless Steel, Sizes 0-3) NEMA Type 4		Dust-tight Industrial Use Enclosure NEMA Type 12†		Open Type		
		Volts	Max. HP		Type	Price	Type	Price	Type	Price	Vertical Type	Horizontal Type	Price
2 Pole Single Phase	00	115 230	1/3 1	Single Phase 3-Wire	AG-1	\$ 62.	AW-11	\$108.	Use NEMA Size 0		...	AO-1	\$ 58.
	0	115 230	1 2		SBG-1	74.	SBW-11	120.	SBA-1	\$ 92.	SEB-9	SBO-1	70.
	1	115 230	2 3		SCG-2	86.	SCW-11	150.	SCA-1	104.	SCO-1	SCO-2	80.
3 Pole Single Phase	00	115 230	1/3 1	4-Wire Rep.-Ind.	AG-2	64.	AW-12	110.	Use NEMA Size 0		...	AO-2	60.
		115 230	1/3 1	4-Wire Split Ph.	AG-3	64.	AW-13	110.	Use NEMA Size 0		...	AO-3	80.
	0	115 230	1 2	4-Wire Rep.-Ind.	SBG-2	78.	SBW-12	122.	SBA-2	94.	SBO-10	SBO-2	72.
		115 230	1 2	4-Wire Split Ph.	SBG-3	78.	SBW-13	122.	SBA-3	94.	SBO-11	SBO-3	72.
	1	115 230	2 3	4-Wire Rep.-Ind.	SCG-4	88.	SCW-12	152.	SCA-2	106.	SCO-3	SCO-4	82.
		115 230	2 3	4-Wire Split Ph.	SCG-6	88.	SCW-13	152.	SCA-3	106.	SCO-5	SCO-6	82.
	2	110 208-220 440-550	3/4 1 1/2 2	3 Phase	AG-4	64.	AW-14	110.	Use NEMA Size 0		...	AO-4	60.
		110 208-220 440-550	2 2 5		SBG-4	76.	SBW-14	122.	SBA-4	94.	SBO-12	SBO-4	72.
3 Pole Poly-phase	1	110 208-220 440-550	3 7 1/2 10		SCG-8	88.	SCW-14	152.	SCA-4	106.	SCO-7	SCO-8	82.
	2	110 208-220 440-550	7 1/2 15 25		SDG-2	172.	SDW-11	278.	SDA-1	202.	SDO-1	SDO-2	156.
	3	110 208-220 440-550	15 30 50		SEG-2	287.	SEW-11	441.	SEA-1	353.	SEO-1	SEO-2	259.
	4	208-220 440-550	50 100		FG-3	698.	FW-11	970.	FA-1	800.	FO-1	FO-3	646.
	5	208-220 440-550	100 200		GG-3	1466.	GW-11	1886.	GA-1	1686.	GO-1	GO-3	1165.
	6	208-220 440-550	200 400		HG-1	3103.	HW-1	3603.	HA-1	3373.	HO-1	...	2603.
	7	208-220 440-550	300 600		JG-1	4328.	JW-1	4828.	JA-1	4598.	JO-1	...	3828.
	8	208-220 440-550	450 900		KG-1	6354.	KW-1	6854.	KA-1	6624.	KO-1	...	5854.
4 Pole Poly-phase	0	220 440-550	3 5	2 Phase 4-Wire	SBG-5	96.	SBW-15	142.	SBA-5	114.	SBO-13	SBO-5	92.
	1	220 440-550	7 1/2 10		SCG-10	109.	SCW-15	173.	SCA-5	127.	SCO-9	SCO-10	105.
	2	220 440-550	15 25		SDG-4	214.	SDW-12	324.	SDA-2	244.	SDO-3	SDO-4	198.
	3	220 440-550	30 50		EG-4	358.	EW-12	510.	EA-2	422.	EO-3	EO-4	328.
	4	220 440-550	50 100		FG-4	888.	FW-12	1162.	FA-2	892.	FO-2	FO-4	834.
	5	220 440-550	100 200		GG-4	1757.	GW-12	2195.	GA-2	2109.	GO-2	GO-4	1455.

†Suitable for NEMA 3 or 3R applications.

ORDERING INFORMATION REQUIRED

1. Class and type number.
2. Horsepower, voltage, phase, frequency and full load current of motor.
3. Control voltage and frequency if different from line voltage.
4. Any special features required.



AC REVERSING MAGNETIC STARTERS

WITH OVERLOAD PROTECTION

CLASS
8736

Reversing line voltage magnetic starters are used to start, stop and reverse ac squirrel cage motors where full motor starting torque will not damage the driven machinery and where the starting inrush current is not objectionable. Motor protection is provided by melting alloy type thermal overload relays. All reversing starters are supplied with an electrical and mechanical interlock except Size 00 which has a mechanical interlock only. (See page 151 for dimensions).

600 VOLTS MAX.

50-60 HERTZ

No. of Poles	NEMA Size	Ratings		Type of Motor	General Purpose Enclosure NEMA Type 1		Water-tight Enclosure (AISI #304 Stainless Steel Sizes 0-5) NEMA Type 4		Dust-tight Industrial Use Enclosure NEMA Type 12†		For Hazardous Locations				Open Type			
											Class II Groups E, F, & G NEMA Type 9		Spm Top Class I Groups C & D Class II Groups E, F, & G NEMA Types 7-9					
		Volts	Max. HP		Type	Price *	Type	Price *	Type	Price *	Type	Price *	Type	Price *	Type	Price *	Vertical Type	Horizontal Type	Price *
2 Pole Single Phase	00	115 230	1/3	Single Phase 3-Wire	AG-1	\$ 66.	AW-11	\$ 112.	Use NEMA Size 0		AE-1	\$ 112.	Use NEMA Size 0		...	AO-1	\$ 62.	
	0	115 230	2		SBG-1	78.	SBW-11▲	124.	SBA-1▲	\$ 96.	BE-1	124.	SBR-6	\$ 239.	SBO-7	SBO-1	74.	
	1	115 230	3		SCG-2	90.	SCW-11▲	154.	SCA-1▲	108.	CE-1	154.	SCR-6	251.	SCO-1	SCO-2	84.	
	00	115 230	1/3		4-Wire Rep-Ind.	AG-2	68.	AW-12	114.	Use NEMA Size 0		AE-2	114.	Use NEMA Size 0		...	AO-2	64.
3 Pole Single Phase		115 230	1/3	4-Wire Split Ph.	AG-3	68.	AW-13	114.	Use NEMA Size 0		AE-3	114.	Use NEMA Size 0		...	AO-3	64.	
	0	115 230	2	4-Wire Rep-Ind.	SBG-2	80.	SBW-12▲	126.	SBA-2▲	98.	BE-2	126.	SBR-7	241.	SBO-8	SBO-2	76.	
		115 230	2	4-Wire Split Ph.	SBG-3	80.	SBW-13▲	126.	SBA-3▲	98.	BE-3	126.	SBR-8	241.	SBO-9	SBO-3	76.	
	1	115 230	3	4-Wire Rep-Ind.	SCG-4	92.	SCW-12▲	156.	SCA-2▲	110.	CE-2	156.	SCR-7	253.	SCO-3	SCO-4	86.	
		115 230	3	4-Wire Split Ph.	SCG-6	92.	SCW-13▲	156.	SCA-3▲	110.	CE-3	156.	SCR-8	253.	SCO-5	SCO-6	86.	
	00	110 208-220 440-550	3/4 1 1/2	3 Phase	AG-4	72.	AW-14	118.	Use NEMA Size 0		AE-4	118.	Use NEMA Size 0		...	AO-4	68.	
	0	110 208-220 440-550	2 3 5		SBG-4	84.	SBW-14▲	130.	SBA-4▲	102.	BE-4	130.	SBR-9	245.	SBO-10	SBO-4	80.	
	1	110 208-220 440-550	3 7 1/2 10		SCG-8	96.	SCW-14▲	160.	SCA-4▲	114.	CE-4	160.	SCR-9	257.	SCO-7	SCO-8	90.	
	2	110 208-220 440-550	7 1/2 15 25		SDG-2	184.	SDW-11▲	288.	SDA-1▲	214.	DE-1	326.	SDR-3	427.	SDO-1	SDO-2	168.	
	3	110 208-220 440-550	15 30 50		SEG-2	305.	SEW-11	459.	SEA-1	371.	EE-1	503.	SEK-3	684.	SEO-1	SEO-7	277.	
	4	208-220 440-550	50 100		FG-3	724.	FW-11	996.	FA-1	826.	FE-1	1070.	FR-1	1173.	FO-1	FO-3	672.	
	5	208-220 440-550	100 200		GG-3	1551.	GW-11	1771.	GA-1	1771.	...	...	GR-1	2536.	GO-1	GO-3	1250.
6	208-220 440-550	200 400	HG-1		3468.	HW-1	3968.	HA-1	3738.	...	...	...	...	HO-1	...	2968.	
7	208-220 440-550	300 600	JG-1		4735.	JW-1	5235.	JA-1	5005.	...	...	...	...	JO-1	...	4235.	
8	208-220 440-550	450 900	KG-1		6761.	KW-1	7261.	KA-1	7031.	...	...	...	...	KO-1	...	6261.	
4 Pole Poly-phase	0	220 440-550	3 5		2 Phase 4-Wire	SBG-5	104.	SBW-15▲	150.	SBA-5▲	122.	BE-5	150.	SBR-10	265.	SBO-11	SBO-5	100.
	1	220 440-550	7 1/2 10			SCG-10	117.	SCW-15▲	181.	SCA-5▲	135.	CE-5	181.	SCR-10	278.	SCO-9	SCO-10	113.
	2	220 440-550	15 25	SDG-4		226.	SDW-12▲	336.	SDA-2▲	255.	DE-2	364.	SDR-4	475.	SDO-3	SDO-4	210.	
	3	220 440-550	30 50	EG-4		376.	EW-12	528.	ED-2	440.	EE-2	572.	...	...	EO-1	EO-4	346.
	4	220 440-550	50 100	FG-4		914.	FW-12	1188.	FA-2	1018.	FE-2	1260.	...	...	FO-2	FO-4	850.
	5	220 440-550	100 200	GG-4		1841.	GW-12	2280.	GA-2	2193.	...	...	...	...	GO-2	GO-4	1540.

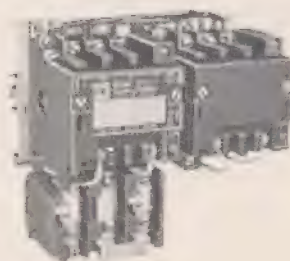
*Prices of Class 8736 two and three pole single phase starters include one overload relay thermal unit. Two thermal units are included for three and four pole poly-phase starters. Deduct \$1.50 each if thermal units are omitted.

▲Separate NEMA Type 4 and 12 enclosures available: see Page 210.

†Suitable for NEMA 3 or 3R applications.

ORDERING INFORMATION REQUIRED

1. Class and type number.
2. Horsepower, voltage, phase, frequency and full load current of motor.
3. Control voltage and frequency if different from line voltage.
4. Select melting alloy thermal units from table 3 on page 219.
5. Any special features required.



Class 8736, Type SCO-8
Size 1, 3 pole reversing starter



Class 8736 reversing starter
in NEMA 1 enclosure



AC REVERSING CONTACTORS & STARTERS

APPROXIMATE DIMENSIONS AND SHIPPING WEIGHTS

CLASS
8702
8736

Class	NEMA Size & Type	Enclosure Type	Diag. No.	Number of Poles	Dimensions													Shipping Weight (Lbs.)
					A	B	C	D	E	F	G	H	I	J	K	L	M	
8702 (Listed on Page 149)	Size 00 TYPE A	Open Type	2	2-3	6 ¹⁷ / ₃₂	5 ³ / ₈	3 ⁷ / ₈	5 ¹ / ₁₆	4 ⁹ / ₁₆	7 ¹ / ₂	---	---	---	---	---	---	---	6
		NEMA	1	2-3	7 ¹¹ / ₁₆	8 ³ / ₈	4 ¹¹ / ₁₆	6	6 ⁷ / ₈	9 ¹ / ₂	---	---	---	---	---	---	---	1
	Sizes 0 & 1 TYPES SB & SC	Open Type	3	2-3	7 ¹ / ₈	5	5 ⁵ / ₁₆	---	---	3 ¹¹ / ₃₂	5 ¹ / ₃₂	4 ¹¹ / ₃₂	3 ¹ / ₁₆	5 ¹ / ₂	2 ¹ / ₃₂	---	---	11
		NEMA 1	1	2-4	10 ¹ / ₃₂	5 ¹⁵ / ₃₂	5 ⁵ / ₁₆	8	1 ¹ / ₃₂	---	7 ¹ / ₃₂	5 ¹ / ₃₂	7 ¹ / ₃₂	8	1 ¹ / ₂	---	---	12
					11 ⁷ / ₈	11 ⁷ / ₈	7 ¹³ / ₃₂	9 ³ / ₃₂	9 ³ / ₃₂	5 ¹ / ₁₆	---	---	---	---	---	---	---	16
	Size 2 TYPE SD	Open Type	3	3	9	6 ⁷ / ₈	6 ¹ / ₂	---	---	4 ¹ / ₂	3 ¹ / ₈	5 ⁵ / ₈	1 ¹ / ₄	5	1 ¹ / ₂	---	---	16
		NEMA 1	1	3-4	12 ²¹ / ₃₂	7 ⁵ / ₃₂	6 ¹ / ₂	10 ³ / ₈	5 ¹ / ₂	---	---	---	---	---	---	---	---	17
					14 ¹ / ₈	14 ¹ / ₈	7 ³ / ₁₆	12 ³ / ₃₂	1 ¹ / ₂	7 ¹ / ₁₆	---	---	---	---	---	---	---	24
	Size 3 TYPE SE	Open Type	3	3	11 ¹ / ₈	7 ¹ / ₂	7	11 ³ / ₃₂	2 ¹ / ₁₆	---	---	---	---	---	---	---	---	35
		NEMA 1	1	3	16 ¹ / ₈	24 ¹ / ₈	8 ¹ / ₂	13 ¹ / ₂	2 ¹ / ₁₆	7 ¹ / ₁₆	---	---	---	---	---	---	---	47
	Size 4 TYPE F	Open Type	2	3	15 ¹ / ₂	15 ⁵ / ₈	6 ³ / ₈	14	14 ¹ / ₂	7 ¹ / ₁₆	---	---	---	---	---	---	---	85
		NEMA 1	1	3	18 ¹¹ / ₁₆	22 ¹ / ₁₆	8 ⁵ / ₈	16	20	7 ¹ / ₁₆	---	---	---	---	---	---	---	110
	Size 5 TYPE G	Open Type	2	3	22 ¹ / ₈	24 ¹ / ₃	10 ¹ / ₄	14	22 ³ / ₁₆	9 ¹ / ₁₆	---	---	---	---	---	---	---	175
		NEMA 1	1	3	26 ¹ / ₄	39	13 ⁹ / ₁₆	22	37	1 ¹ / ₁₆	---	---	---	---	---	---	---	230
Sizes 6, 7 & 8					Refer to Square D Field Office													
8736 (Listed on Page 150)	Size 00 TYPE A	Open Type	2	3	6 ¹⁷ / ₃₂	7 ⁹ / ₁₆	3 ³ / ₈	5 ⁵ / ₁₆	5 ⁵ / ₈	7 ¹ / ₂	---	---	---	---	---	---	---	7
		NEMA 1	1	2-3	7 ¹¹ / ₁₆	9 ³ / ₈	5 ¹¹ / ₁₆	6	8 ³ / ₈	9 ¹ / ₂	---	---	---	---	---	---	---	13
	Sizes 0 & 1 TYPES SB & SC	Open Type	4	2-3	7 ⁷ / ₈	6 ² / ₃₂	5 ⁵ / ₁₆	---	---	3 ¹¹ / ₃₂	1 ⁵ / ₃₂	4 ¹¹ / ₃₂	6 ⁷ / ₃₂	4 ¹ / ₂	5 ¹ / ₁₆	2 ¹ / ₃₂	---	12
		NEMA 1	1	2-4	10 ¹ / ₃₂	7 ¹¹ / ₃₂	5 ⁵ / ₁₆	8	1 ¹ / ₃₂	---	7 ¹ / ₃₂	5 ¹ / ₃₂	6 ² / ₃₂	6 ³ / ₈	5 ¹ / ₁₆	1 ¹ / ₂	---	13
					1 ⁷ / ₈	11 ⁷ / ₈	7 ¹⁷ / ₃₂	9 ³ / ₃₂	9 ³ / ₃₂	5 ¹ / ₁₆	---	---	---	---	---	---	---	17
	Size 2 TYPE SD	Open Type	4	3	9	8 ¹ / ₂	---	---	---	4 ¹ / ₂	3 ³ / ₈	5 ³ / ₈	1 ¹ / ₂	5	5 ¹ / ₂	1 ¹ / ₂	---	17
		NEMA 1	1	3-4	12 ²¹ / ₃₂	9 ¹ / ₄	6 ¹ / ₂	10 ³ / ₈	5 ¹ / ₂	---	---	---	---	---	---	---	---	20
					14 ¹ / ₈	14 ¹ / ₈	7 ¹ / ₁₆	1 ¹ / ₃₂	12	5 ¹ / ₁₆	---	---	---	---	---	---	---	25
	Size 3 TYPE SE	Open Type	4	3	12 ²¹ / ₃₂	11 ²¹ / ₃₂	7	11 ³ / ₃₂	---	---	---	---	---	---	---	---	---	38
		NEMA 1	1	3	16 ¹ / ₈	24 ¹ / ₈	8 ⁵ / ₈	13 ¹ / ₂	2 ¹ / ₁₆	7 ¹ / ₁₆	---	---	---	---	---	---	---	50
	Size 4 TYPE F	Open Type	2	3	15 ¹ / ₂	15 ⁵ / ₈	6 ³ / ₈	14	14 ¹ / ₂	7 ¹ / ₁₆	---	---	---	---	---	---	---	95
		NEMA 1	1	3	18 ¹¹ / ₁₆	22 ¹ / ₁₆	8 ⁵ / ₈	16	20	7 ¹ / ₁₆	---	---	---	---	---	---	---	120
	Size 5 TYPE G	Open Type	2	3	22 ¹ / ₈	24 ¹ / ₃	10 ¹ / ₄	14	22 ³ / ₁₆	9 ¹ / ₁₆	---	---	---	---	---	---	---	190
		NEMA 1	1	3	26 ¹ / ₄	39	13 ⁹ / ₁₆	22	37	1 ¹ / ₁₆	---	---	---	---	---	---	---	230
Sizes 6, 7 & 8					Refer to Square D Field Office													

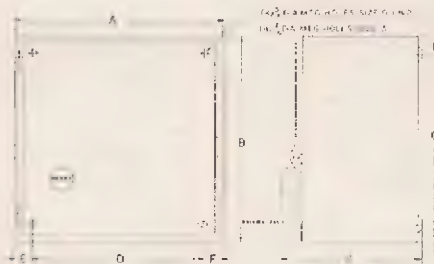


Diagram 1
NEMA 1 General Purpose Enclosure

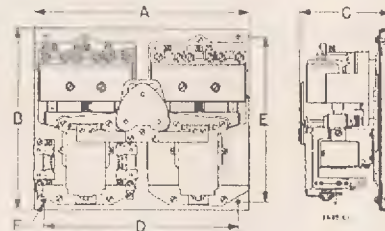


Diagram 2
Sizes 00, 4 & 5
Open Type, Horizontally Mounted
Contactor or Starter

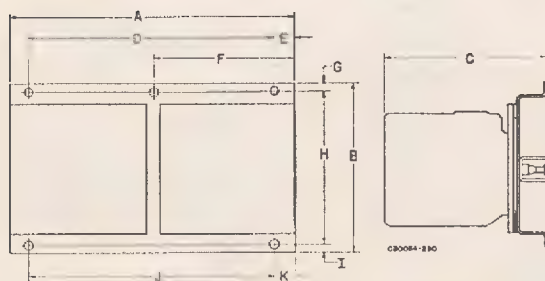


Diagram 3
Size 0-3 Contactors
Open Type, Horizontally Mounted

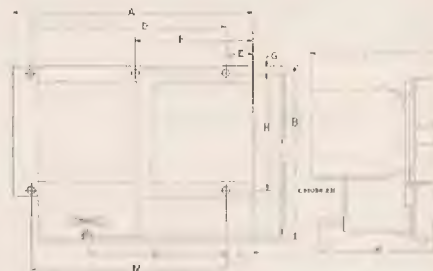


Diagram 4
Size 0-3 Starters
Open Type, Horizontally Mounted



AC REVERSING CONTACTORS & STARTERS

CLASS
8702
8736

TYPES B, C, D AND E — REVERSING CONTACTORS AND STARTERS

600 VOLTS MAX.

25-60 HERTZ

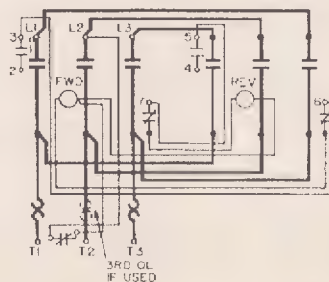
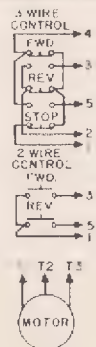
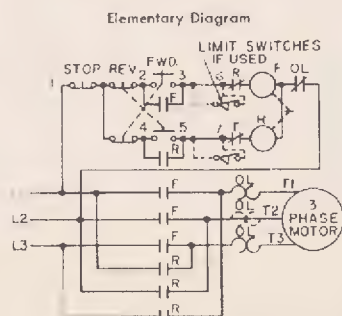
Class	No. of Poles	NEMA Size	Ratings		Type of Motor	General Purpose Enclosure NEMA Type 1			Water-tight Enclosure (AISI #304 Stainless Steel) NEMA Type 4		Dust-tight Industrial Use Enclosure NEMA Type 12†		Open Type		
			Volts	Max. HP		Vertical Type	Horizontal Type	Price *	Type	Price *	Type	Price *	Vertical Type	Horizontal Type	Price *
Class 8702 Without Overload Protection	2 Pole Single Phase	0	115	1	Single Phase 3-Wire	BG-9	BG-1	\$ 74.	BW-11	\$120.	BA-1	\$ 92.	BO-9	BO-1	\$ 70.
			230	2		CG-1	CG-2	86.	CW-11	150.	CA-1	104.	CO-1	CO-2	80.
			115	2											
	3 Pole Single Phase	0	115	1	4-Wire Rep.-Ind.	BG-10	BG-2	76.	BW-12	122.	BA-2	94.	BO-10	BO-2	72.
			230	2		BG-11	BG-3	76.	BW-13	122.	BA-3	94.	BO-11	BO-3	72.
			115	2											
		1	230	3	4-Wire Split-Phase	CG-3	CG-4	88.	CW-12	152.	CA-2	106.	CO-3	CO-4	82.
			115	2		CG-5	CG-6	88.	CW-13	152.	CA-3	106.	CO-5	CO-6	82.
			230	3											
	3 Pole Poly-phase	0	110	2	3 Phase	BG-12	BG-4	76.	BW-14	122.	BA-4	94.	BO-12	BO-4	72.
			208-220	3											
			440-550	5											
		1	110	3		CG-7	CG-8	88.	CW-14	152.	CA-4	106.	CO-7	CO-8	82.
			208-220	7½		DG-1	DG-2	172.	DW-11	276.	DA-1	202.	DO-1	DO-2	156.
			440-550	10											
	4 Pole Poly-phase	0	110	15	2 Phase 4-Wire	EG-1	EG-2	287.	EW-11	441.	ED-1	353.	EO-1	EO-2	259.
			208-220	30											
			440-550	50											
		1	220	3		BG-13	BG-5	96.	BW-15	142.	BA-5	114.	BO-13	BO-5	92.
			440-550	7½		CG-9	CG-10	109.	CW-15	173.	CA-5	127.	CO-9	CO-10	105.
			220	15		DG-3	DG-4	214.	DW-12	324.	DA-2	244.	DO-3	DO-4	198.
Class 8736 With Overload Protection*	2 Pole Single Phase	0	115	1	Single Phase 3-Wire	BG-7	BG-1	78.	BW-11	124.	BA-1	96.	BO-7	BO-1	74.
			230	2		CG-1	CG-2	90.	CW-11	154.	CA-1	108.	CO-1	CO-2	84.
			115	2											
	3 Pole Single Phase	0	115	1	4-Wire Rep.-Ind.	BG-8	BG-2	80.	BW-12	126.	BA-2	98.	BO-8	BO-2	76.
			230	2		BG-9	BG-3	80.	BW-13	126.	BA-3	98.	BO-9	BO-3	76.
			115	2											
		1	230	3	4-Wire Split-Phase	CG-3	CG-4	92.	CW-12	156.	CA-2	110.	CO-3	CO-4	86.
			115	2		CG-5	CG-6	92.	CW-13	156.	CA-3	110.	CO-5	CO-6	86.
			230	3											
	3 Pole Poly-phase	0	110	2	3 Phase	BG-10	BG-4	84.	BW-14	130.	BA-4	102.	BO-10	BO-4	80.
			208-220	3											
			440-550	5											
		1	110	3		CG-7	CG-8	96.	CW-14	160.	CA-4	114.	CO-7	CO-8	90.
			208-220	7½		DG-1	DG-2	184.	DW-11	288.	DA-1	214.	DO-1	DO-2	168.
			440-550	10											
	4 Pole Poly-phase	0	110	15	2 Phase 4-Wire	EG-1	EG-2	305.	EW-11	459.	ED-1	371.	EO-1	EO-2	277.
			208-220	30											
			440-550	50											
		1	220	3		BG-11	BG-5	104.	BW-15	150.	BA-5	122.	BO-11	BO-5	100.
			440-550	7½		CG-9	CG-10	117.	CW-15	181.	CA-5	135.	CO-9	CO-10	113.
			220	15		DG-3	DG-4	226.	DW-12	336.	DA-2	256.	DO-3	DO-4	210.

*Prices of Class 8736, two and three pole single phase starters include one thermal unit, and two thermal units for three and four pole polyphase starters. Deduct \$1.50 each if thermal units are omitted.
†Suitable for NEMA 3 or 3R applications.

ORDERING INFORMATION REQUIRED

1. Class and type number.
2. Horsepower, voltage, phase, frequency and full load current of motor.
3. Control voltage and frequency if different from line voltage.
4. Select thermal units from table 3, page 219.
5. Any special features required

WIRING DIAGRAMS



HORIZONTAL MOUNTING ARRANGEMENT
Class 8736 Type S Sizes 0, 1 and 2, 3 Pole,
3 Phase Reversing Starters



AC REVERSING COMBINATION STARTERS

WITH DISCONNECT SWITCH

LINE VOLTAGE—WITH MELTING ALLOY TYPE THERMAL OVERLOAD RELAYS

With minor exceptions, the National Electrical Code requires a disconnecting means for every motor. The Class 8738 reversing combination starters provide the disconnect switch to meet this requirement and a Class 8736 reversing magnetic starter all in one enclosure.

CLASS
8738

50-60 HERTZ

3 POLE

600 VOLTS MAX.

RATINGS			NEMA Size	General Purpose Enclosure NEMA Type 1		Water-tight Enclosure (AISI 304 Stainless Steel) NEMA Type 4		Dust-tight Industrial Use Enclosure NEMA Type 12**		
Max. HP Poly-phase	Volts	Fuse Clip Size Amps.		Type	Price *	Type	Price *	With External Reset	Without External Reset	Price *
3	208-220	None	0	SBG-11	\$ 152.	SBW-11	\$ 274.	SBA-21	SBA-11	\$ 186.
		30	0	SBG-12	155.	SBW-12	277.	SBA-22	SBA-12	189.
5	440-550	None	0	SBG-11	152.	SBW-11	274.	SBA-21	SBA-11	186.
		30	0	SBG-13	157.	SBW-13	279.	SBA-23	SBA-13	191.
7 1/2	208-220	None	1	SCG-11	162.	SCW-11	284.	SCA-21	SCA-11	196.
		30	1	SCG-12	165.	SCW-12	287.	SCA-22	SCA-12	199.
10	440-550	None	0	SBG-11	152.	SBW-11	274.	SBA-21	SBA-11	186.
		30	0	SBG-13	157.	SBW-13	279.	SBA-23	SBA-13	191.
15	208-220	None	1	SCG-11	162.	SCW-11	284.	SCA-21	SCA-11	196.
		30	1	SCG-12	165.	SCW-12	287.	SCA-22	SCA-12	199.
25	440-550	None	1	SCG-13	167.	SCW-13	289.	SCA-23	SCA-13	201.
		30	1	SCG-14	167.	SCW-14	289.	SCA-24	SCA-14	201.
30	208-220	None	2	SDG-11	269.	SDW-11	455.	SDA-21	SDA-11	313.
		30	2	SDG-12	273.	SDW-12	459.	SDA-22	SDA-12	317.
50	440-550	None	2	SDG-13	285.	SDW-13	471.	SDA-23	SDA-13	329.
		30	2	SDG-14	285.	SDW-14	471.	SDA-24	SDA-14	329.
75	208-220	None	2	SDG-11	269.	SDW-11	455.	SDA-21	SDA-11	313.
		30	2	SDG-12	273.	SDW-12	459.	SDA-22	SDA-12	317.
100	440-550	None	2	SDG-13	285.	SDW-13	471.	SDA-23	SDA-13	329.
		30	2	SDG-14	285.	SDW-14	471.	SDA-24	SDA-14	329.
150	208-220	None	3	SEG-11	444.	SEW-11	770.	SEA-21	SEA-11	502.
		30	3	SEG-12	472.	SEW-12	798.	SEA-22	SEA-12	530.
200	440-550	None	2	SDG-11	269.	SDW-11	455.	SDA-21	SDA-11	313.
		30	2	SDG-12	276.	SDW-12	462.	SDA-22	SDA-12	317.
300	208-220	None	3	SEG-11	444.	SEW-11	770.	SEA-21	SEA-11	502.
		30	3	SEG-12	472.	SEW-12	798.	SEA-22	SEA-12	530.
400	440-550	None	3	SEG-11	444.	SEW-11	770.	SEA-21	SEA-11	502.
		30	3	SEG-12	455.	SEW-12	781.	SEA-22	SEA-12	513.
500	208-220	None	4	FG-11	927.	FW-11	1339.	FA-21	FA-11	1086.
		30	4	FG-12	944.	FW-12	1356.	FA-22	FA-12	1103.
600	440-550	None	4	FG-11	927.	FW-11	1339.	FA-21	FA-11	1086.
		30	4	FG-12	948.	FW-12	1360.	FA-22	FA-12	1107.
700	208-220	None	4	FG-11	927.	FW-11	1339.	FA-21	FA-11	1086.
		30	4	FG-12	948.	FW-12	1360.	FA-22	FA-12	1107.
800	440-550	None	4	FG-11	927.	FW-11	1339.	FA-21	FA-11	1086.
		30	4	FG-12	948.	FW-12	1360.	FA-22	FA-12	1107.
900	208-220	None	4	FG-11	927.	FW-11	1339.	FA-21	FA-11	1086.
		30	4	FG-12	948.	FW-12	1360.	FA-22	FA-12	1107.
1000	440-550	None	4	FG-11	927.	FW-11	1339.	FA-21	FA-11	1086.
		30	4	FG-12	948.	FW-12	1360.	FA-22	FA-12	1107.

*Prices include two overload relay thermal units. Deduct \$1.50 each if thermal units are omitted.

†HP rating applies only when dual element fuses are used.

‡This rating for standard starting duty only. Fuses not large enough for long time acceleration.

**Suitable for NEMA Type 3 and 3R applications.

Refer to page 143 for ordering instructions.

PRICES FOR ADDITIONS AND SPECIAL FEATURES OF 8538, 8539 AND 8738

(Applies to starters on pages 143, 144 and those listed above.)

"Start-Stop" push button in cover of NEMA Type 1 enclosure.	Form A	\$ 8.00	\$ 8.00	\$ 8.00	\$ 8.00	\$ 8.00	\$22.00
"Start-Stop" push button in cover of NEMA Type 4, 7, 9 or 12 enclosure.	Form A	22.00	22.00	22.00	22.00	22.00	22.00
"Forward-Reverse-Stop" push button in cover of NEMA Type 1, 4 or 12 enclosure.	Form A1	40.00	40.00	40.00	40.00	40.00	40.00
"Hand-Off-Auto" selector switch in cover of NEMA Type 1 enclosure.	Form C	8.00	8.00	8.00	8.00	8.00	8.00
"Hand-Off-Auto" selector switch in cover of NEMA Type 4, 7, 9 or 12 enclosure.	Form C	22.00	22.00	22.00	22.00	22.00	22.00
One pilot light, without interlock, in cover of NEMA Type 1, 4 or 12 enclosure.	Form P	15.00	15.00	15.00	15.00	15.00	15.00
One pilot light, without interlock, in cover of NEMA Type 7 or 9 enclosure.	Form P	27.00	27.00	27.00	27.00	27.00	27.00
Separate control circuit (specify voltage and frequency).	Form S	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.
Additional electrical interlocks, each.	Form X	11.00	11.00	11.00	11.00	11.00	33.00
Standard control circuit transformer.	Form FT	27.00	38.00	56.00	68.00	77.00	inc.
Additional thermal overload relay with relay unit.	Form J	4.00	4.00	4.00	4.00	4.00	70.00
Legend plate on enclosure with markings as specified.		1.50	1.50	1.50	1.50	1.50	
Automatic hand reset adjustable BIMETALLIC overload relays.	★	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.

●Indicate pilot light color as Form P (red) or Form P (green), etc., and how pilot light is to be wired into the circuit. If an interlock in series with the pilot light is required -- add \$12.

○Not applicable to Type S starters, which have provisions for 2 or 3 thermal units as standard -- add \$1.50 for third thermal unit.

★Contact your local Square D field office for more information.



SCHEDULE DS-1 DISCOUNT

PAGE 153

AC MULTI-SPEED MAGNETIC STARTERS

CLASS
8810
8811
8812

Classes 8810, 11 and 12 Multi-speed starters are designed to control 2, 3 and 4 speed motors, respectively. Starters are available for constant torque, variable torque or constant horsepower motors of either the consequent pole (single, reconnectable winding) or the separate winding (2 winding) variety. Two melting alloy type overload relays for each speed provide motor running overcurrent protection. (Contact nearest Square D office for dimensions).

600 VOLTS MAX.

50-60 HERTZ

Type of Motor	NEMA Size	Maximum Horsepower	CLASS 8810 Two Speed						CLASS 8811 Three Speed		CLASS 8812 Four Speed	
			General Purpose Enclosure NEMA Type 1		Water-tight Enclosure (AISI #304 Stainless Steel) NEMA Type 4		Dust-tight Industrial Use Enclosure NEMA Type 12†		SPIN TOP™ Class I Groups C & D Class II Groups E, F & G NEMA Types 7 & 9		General Purpose Enclosure NEMA Type 1	
			Type	Price*	Type	Price*	Type	Price*	Type	Price*	Type	Price*

SINGLE WINDING (CONSEQUENT POLE)

Constant Horsepower	C	2	3	SBG-1	\$ 180.	SBW-11	\$ 256.	SBA-1	\$ 191.	SCR-1	\$ 382.	BO-1	SB0-1	\$ 158.	SBG-1	\$ 408.	SBG-1	\$ 606.
	1	5	7½	SCG-1	172.	SCW-11	266.	SCA-1	203.	SDR-1	650.	CO-1	SC0-1	166.	SCG-1	430.	SCG-1	644.
	2	10	20	SDG-1	306.	SDW-11	424.	SDA-1	352.	ER-7	1024.	DO-1	SD0-1	290.	SDG-1	636.	SDG-1	954.
	3	25	40	EG-1	462.	EW-11	634.	EA-1	562.	...	...	EO-1	...	434.	EG-1	914.	EG-1	1420.
	4	40	75	FG-1	1224.	FW-11	1576.	FA-1	1422.	...	...	FO-1	...	1114.	FG-1	2214.	FG-1	3342.
	5	75	150	GG-1	2336.	GW-11	3159.	GA-1	3159.	...	...	GO-1	...	2119.	...	...	...	...
Constant Torque	1	5	7½	HG-1	5295.	...	...	HA-1	5749.	...	...	HO-1	...	4840.	...	...	...	...
	2	10	20	SBG-2	160.	SBW-12	256.	SBA-2	191.	SCR-2	382.	BO-2	SB0-2	156.	SBG-2	408.	SBG-2	606.
	3	25	40	SCG-2	172.	SCW-12	266.	SCA-2	203.	SDR-2	650.	CO-2	SC0-2	166.	SCG-2	430.	SCG-2	644.
	4	40	75	SDG-2	308.	SDW-12	424.	SDA-2	352.	ER-8	1024.	DO-2	SD0-2	290.	SDG-2	636.	SDG-2	954.
	5	75	150	EG-2	462.	EW-12	634.	EA-2	562.	...	...	EO-2	...	434.	EG-2	914.	EG-2	1420.
	6	100	200	FG-2	1224.	FW-12	1576.	FA-2	1422.	...	...	FO-2	...	1114.	FG-2	2214.	FG-2	3342.
Variable Torque	1	5	7½	GG-2	2336.	GW-12	3159.	GA-2	3159.	...	...	GO-2	...	2119.	...	...	...	...
	2	10	20	HG-2	5295.	...	...	HA-2	5749.	...	...	HO-2	...	4840.	...	...	...	...

TWO WINDING (SEPARATE WINDING)†

Constant Horsepower	C	2	3	SBG-3	\$ 116.	SBW-13	\$ 212.	SBA-3	\$ 147.	SCR-3	\$ 323.	BO-3	SB0-3	\$ 112.	SBG-3	\$ 290.	SBG-3	\$ 416.
	1	5	7½	SCG-3	130.	SCW-13	224.	SCA-3	161.	SDR-3	510.	CO-3	SC0-3	124.	SCG-3	316.	SCG-3	440.
	2	10	20	SDG-3	228.	SDW-13	348.	SDA-3	272.	ER-3	773.	DO-3	SD0-3	212.	SDG-3	482.	SDG-3	630.
	3	25	40	EG-3	354.	EW-13	526.	EA-3	454.	FR-1	1407.	EO-3	...	326.	EG-3	882.	EG-3	1174.
	4	40	75	FG-3	860.	FW-13	1212.	FA-3	1058.	GR-1	3295.	FO-3	...	808.	FG-3	1548.	FG-3	2174.
	5	75	150	GG-3	1945.	GW-13	2768.	GA-3	2768.	...	...	GO-3	...	1824.	...	...	...	...
Constant Torque or Variable Torque	1	5	7½	HG-3	3988.	...	...	HA-3	4446.	...	...	HO-3	...	3509.	...	...	...	...
	2	10	20	SBG-4	116.	SBW-14	212.	SBA-4	147.	SCR-4	323.	BO-4	SB0-4	112.	SBG-4	290.	SBG-4	416.
	3	25	40	SCG-4	130.	SCW-14	224.	SCA-4	161.	SDR-4	510.	CO-4	SC0-4	124.	SCG-4	316.	SCG-4	440.
	4	40	75	SDG-4	228.	SDW-14	348.	SDA-4	272.	ER-4	773.	DO-4	SD0-4	212.	SDG-4	482.	SDG-4	630.
	5	75	150	EG-4	354.	EW-14	526.	EA-4	454.	FR-2	1407.	EO-4	...	326.	EG-4	882.	EG-4	1174.
	6	100	200	FG-4	860.	FW-14	1212.	FA-4	1058.	GR-2	3295.	FO-4	...	808.	FG-4	1548.	FG-4	2174.
Variable Torque	1	5	7½	GG-4	1945.	GW-14	2768.	GA-4	2768.	...	...	GO-4	...	1824.	...	...	...	...
	2	10	20	HG-4	3988.	...	...	HA-4	4446.	...	...	HO-4	...	3509.	...	...	...	...

*Prices include two thermal units for each speed of the motor. Deduct \$1.50 each if thermal units are omitted.

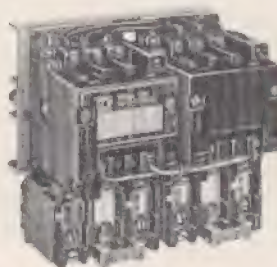
†Prices and type numbers shown for three phase separate winding motor starters apply only when motor windings are star connected. When motor windings are connected open delta use the prices shown for three phase consequent pole motor starters.

‡Separate NEMA Type 4 and 12 enclosures available; see Page 210.

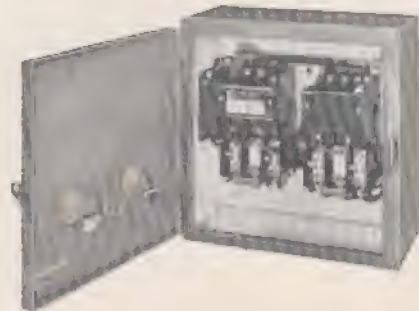
†Suitable for NEMA 3 or 3R applications.

ORDERING INFORMATION REQUIRED

- Class and type number of starter, horsepower, voltage, phase, hertz and full load current at each speed.
- Motor connection diagram. (For 3 and 4 speed devices only).
- Select thermal units from Table 3, Page 219, based upon motor full load currents at each speed. (Do not use horsepower(s) of motor as basis for selection).
- If special features are required, order as Class . . . , similar to Type . . . , and state clearly the features wanted.



Class 8810
Type SCO-4



Class 8810
Type SBG-2



NORPAK® SOLID STATE LOGIC CONTROL

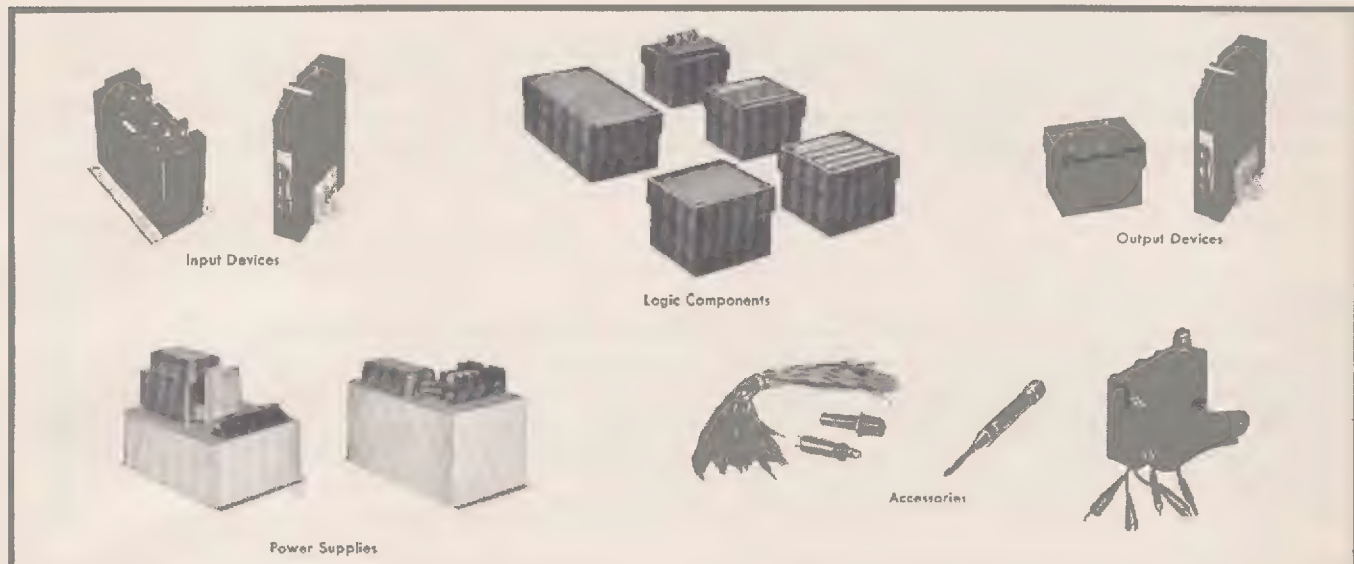
NORPAK provides a method of controlling machine functions with elements that have no moving parts. Since these devices operate in the "decision making" section of a control circuit, they are called logic elements. The use of solid state logic control is desirable where:

High speed switching is required
Adverse atmospheric conditions are present
Fidelity of circuitry is imperative

Extreme long life is desired
Complexity of circuitry exists
Counting, Computing, or Data Storage Functions are required

The components pictured below and listed on the following pages represent all of the parts necessary to make up a complete solid state NORPAK control system.

CLASS
8851
8852
8853



POWER SUPPLIES AND ACCESSORIES

CLASS 8851

Description	Type	Price
Main Logic Power Supply — Input: 120 volts, 60 Hz. only; Output: -20 volts dc, +20 volts dc, Off Return, -V (-130 volts dc) and Pulse (6 volts ac); Rating: 125 NOR units	P-1	\$110.00
Proximity Limit Switch Power Supply — Input: 120 volts, 50/60 Hz.; Output: 3.1 volts ac Rating: 14 Class 9007 Type V-10 or 10 Type V-9 transducers.	P-4	15.00
20 Volt DC Supplementary Power Supply — Input: 120 volts, 60 Hz. only; Output: 20 volts dc, Rating: 1000 NOR units.	P-7	115.00
Main Logic Power Supply — Input: 120 volts, 60 Hz. only; Output and Rating same as Type P-1	P-8	160.00
Readout Tube Power Supply — Input: 120 volts, 50/60 Hz.; Output: 250 volts dc; Rating: 6 Class 8851 Type R-1 Readout Tubes	P-9	42.00
20 volt DC Supplementary Power Supply — Input: 120 volts, 50 Hz. only; Output and Rating same as Type P-7	P-10	160.00
Contactless Switch Power Supply — Input: 120 volts, 50/60 Hz.; Output: 5 volts ac, Rating: 25 Class 9007, Type EO-Contactless Switches.	P-11	15.00
Main Logic Power Supply — Input: 120 volts, 50/60 Hz.; Output: -20 volts dc, +20 volts dc, Off Return, Rating: 50 NOR units	P-12	65.00
Main Logic Power Supply — Input: 120 volts, 60 Hz. only; Output: 20 volts dc, +20 volts dc, Off Return, -V (-130 volts dc) Rating: 1000 NOR units.	P-13	200.00
Main Logic Power Supply — Input: 120 volts 60 Hz. only; Output: -20 volts dc, +20 volts dc, Off Return and -V (130 volts dc) Rating: 2000 NOR units.	P-14	250.00
Pulse Generator Power Supply — Input: 20 volts dc, 400 ma, Output: 6 volts dc; Rating: 1 Class 8851, Type GU or GB Rotary Pulse Generator	P-15	30.00
Stand-By Power Supply — Input: 120 volts, 50/60 Hz.; Output: 12 volts dc and +12 volts dc Rating: 200 NOR units nominal. (Batteries are not included)	P-16	150.00
Amplifier Power Supply — Input: 120 volts, 50/60 Hz.; Output: 24 volts dc (unfiltered); Rating: 50 watts	A-51	57.00
Amplifier Power Supply — Input: 120 volts, 50/60 Hz.; Output: 24 volts dc (unfiltered); Rating: 300 watts	A-301	85.00
Readout Tube — Neon Glow Characters 0-9, 5" high (For use with Type P-9 Power Supply and Type T-11 Bezel Assy.)	R-1	20.00
Taper Pin Insertion Tool — Used for both insertion and extraction of taper pins.	T-1	38.00
Stand-Off Insulator Kit — For wiring of COMMON bus, each	T-5	1.50
Probe Tester — Portable, used to detect logic level signals and to apply inputs	T-6	41.00
Taper Pin Crimping Tool — Contains 100 taper pins and insulating sleeves.	T-7	75.00
Taper Pin & Insulator Kit — Contains 100 taper pins and insulating sleeves.	T-8	5.00
Incandescent Monitor Light — Pilot Light assembly with 20 v, 35 ma bulb and current limit resistor, operates from Class 8852 Type L-9 universal NOR	T-9	3.00
Rotary Selector Switch — 10 position selector switch, includes 4 diodes & knob marked 0-9, for decoding Type L12 BCD counter	T-10	16.00
Bezel and Socket Assembly (For 2 Type R-1 Readout Tubes).	T-11-2	29.00
Bezel and Socket Assembly (For 3 Type R-1 Readout Tubes).	T-11-3	34.00
Bezel and Socket Assembly (For 4 Type R-1 Readout Tubes).	T-11-4	39.00
Bezel and Socket Assembly (For 5 Type R-1 Readout Tubes).	T-11-5	43.00
Transistor Driven Neon Monitor Light — Operates from logic level (-20 v dc) signal. Also requires -V (130 v dc) from Type P-1, P-8 or P-14 Logic Power Supply	T-12	6.00
Probe Tester — Panel mounted, used to detect logic level signals and to apply inputs	T-16	50.00
Patch Wire Kit (Qty. of 50 — 3" Connectors)	W-3	11.00
Patch Wire Kit (Qty. of 50 — 6" Connectors)	W-6	12.00
Patch Wire Kit (Qty. of 50 — 9" Connectors)	W-9	13.00
Patch Wire Kit (Qty. of 25 — 12" Connectors)	W-12	6.50
Patch Wire Kit (Qty. of 25 — 16" Connectors)	W-16	7.00
Patch Wire Kit (Qty. of 10 — 18" Connectors)	W-18	3.50
Patch Wire Kit (Qty. of 10 — 24" Connectors)	W-24	3.75
Patch Wire Kit (Qty. of 10 — 30" Connectors)	W-30	4.00
Patch Wire Kit (Qty. of 10 — 36" Connectors)	W-36	4.25
Patch Wire Kit (Qty. of 10 — 48" Connectors)	W-48	4.25



NORpak[®] SOLID STATE LOGIC CONTROL

CLASS
8851
8852
8853

SIGNAL CONVERTERS

CLASS 8851

Description	Type	Price
Filter Pack — Provides twelve R-C filter circuits for remote — 20 v dc input signals.	F-1	\$ 55.
AC Signal Converter — Provides two inputs for 120 v ac signals. Neon indicating lights are included.	N-2	33.
Proximity Limit Switch Signal Converter — Provides one input for Class 9007, Type V-9 or V-10 Proximity Limit Switch. Also requires Class 8851, Type P-4 Proximity Limit Switch Power Supply for operation of Transducer.	N-4	40.
DC Signal Converter — Provides four inputs for 130 v dc signals. The 130 v dc (—V) is obtained from the Class 8851, Type P-1, P-8 and P-14 Power Supplies. Neon indicating lights are included.	N-5	30.
Intrinsically Safe Signal Converter — Provides one input for pilot device used in explosive atmosphere. U.L. approved for all listed atmospheres.	N-6	60.
Universal Signal Converter — Provides one input for 120 v. ac or dc signals. This device can be track or panel mounted and includes indicating light.	N-8	12.

LOGIC ELEMENTS

CLASS 8852

Description	Type	Price
NOR-6 Pack — Consists of 6 Standard NORs.	L-1	\$ 30.
NOR-20 Pack — Consists of 20 Standard NORs.	L-2	85.
OR-Diode Pack — Consists of 7 two input diode OR functions and 7 isolated diodes.	L-3	30.
Retentive Memory — Consists of one retentive type memory with both on and off outputs. (Resumes last output state when power is turned on).	L-5	50.
Power NOR-6 Pack — Consists of 6 NORs having 2.5 times the output capacity of a standard NOR.	L-6	30.
Transfer Pack — Consists of 4 Transfer Elements.	L-8	37.
Universal NOR-5 Pack — Consists of 5 high capacity transistors that can be used as a NOR or an amplifier.	L-9	45.
Transfer Memory Pack — Consists of two Transfer Element and Memory combination units.	L-11	30.
Binary Coded Decimal (BCD) Decade Counter Pack — Provides a 0-9 count with a 1, 2, 4, 2' output code.	L-12	70.
Reversible Binary Coded Decimal (BCD) Decade Counter Pack — Provides reversible 0-9 count with 1, 2, 4, 2' output code.	L-15	110.
Single Shot Multivibrator Twin Pack — Provides two single shot multivibrator circuits with adjustable pulse width output.	L-16	30.
One Bit-Five Zone Shift Register — Consists of 5 Transfer Memory circuits provided to function as a 5 zone shift register.	L-17	85.
Time Delay Pack — Consists of one adjustable Time Delay element. Range: 1 to 300 Sec.	L-18	60.
NOR-20 Pack — Consists of 20 four input NORs having 1.25 times the output capacity of a standard NOR.	L-19	85.

OUTPUT AMPLIFIERS

CLASS 8853

Description	Type	Price
DC Output Amplifier , Nominally rated at 5 watts for 24 volts dc operation — Includes indicator light.	TO-3	\$ 25.
DC Output Amplifier , Nominally rated at 30 watts for 24 volts dc operation — Includes indicator light.	TO-4	30.
DC Output Amplifier , 2 units per pack rated at 250 milliamps, 20 volts dc max.	TO-7	30.
Readout Tube Driver , for use with Class 8851, Type R-1, Readout Tube and BCD Counter having 1, 2, 4, 2' code only. Requires a Class 8851, Type P-9 power supply for Readout Tube operating voltage.	TO-8	45.
AC Output Amplifier , Rated 5 amps. RMS continuous at 120 volts ac, 35 amp. peak RMS inrush. Indicator light and fuse are provided.	TO-9	75.
AC Output Amplifier , Rated 1 amp. RMS continuous at 120 volts ac, 7 amp. peak RMS inrush. Indicator light is included.	TO-10	40.
AC Output Amplifier , Can be track or panel mounted, rated 1 amp. RMS continuous at 120 volts ac, 7 amp. peak RMS inrush. Indicator light is included.	TO-11	20.
Light Drive Amplifier , Can be track or panel mounted, rated 40 watts at 120 v. ac (.33 amps. RMS). May be used as "Memo-Light" with dc supply. Indicator light is included.	TO-12	15.

ORDERING INFORMATION REQUIRED

Order each device separately by class and type number

NORpak[®] LOGIC SIMULATOR

The NORPAK Logic Simulator is an ideal educational kit for those interested in learning about NORPAK solid state logic control. In addition, the circuit designer will find the simulator to be a useful tool in checking logic circuits.

The inputs consist of six push buttons to simulate momentary contact devices and four toggle switches to simulate maintained contact devices. Eight incandescent pilot lights are provided to indicate output signals. Patch wires with tapered pin connectors and an insertion tool are supplied with each simulator.

Standard, off the shelf, elements are added to meet specific needs. The Simulator is not suitable for use with the Retentive Memory logic elements.

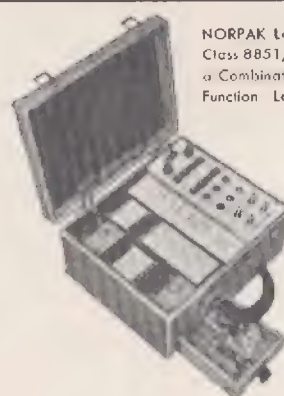
A typical set of logic components could include: 1 — Type L-1 NOR 6 Pack, 1 — Type L-2 NOR 20 Pack, 1 — Type L-3 OR Pack and 2 — Type L-18 Timers.

Class 8851, Type S-1 Logic Simulator, Less Logic Elements.

\$200.00 Net

ORDERING INFORMATION REQUIRED

Order 1—Class 8851 Type S-1 Simulator and each logic element by Class 8852 and its type number as separate items on the order.



NORPAK Logic Simulator
Class 8851, Type S-1 with
a Combination of Control
Function Logic Elements



AUTOMATIC TRANSFER PANELS

TUNGSTEN, FLUORESCENT and MERCURY ARC LAMP LOADS or MOTOR LOADS

Automatic transfer panels are used when it is necessary to maintain continuous power service, such as in a hospital operating room or for emergency lighting in public places. The panels automatically switch the load from the normal source to an emergency source, when the former fails, and automatically restores the load to normal service when it is again available. These panels are also suitable for motor loads.

CLASS
8901

ELECTRICALLY HELD — NEMA TYPE 1 GENERAL PURPOSE ENCLOSURE

HORSEPOWER RATINGS				480 Volts Max. Lighting Load												600 Volts Max. HP Load					
Panel Amp. Rating	Max. HP Rating			Service ▲				30 Ampere		60 Ampere		100 Ampere		200 Ampere		300 Ampere					
	Volts	2-3 Phase	Single Phase	AC Normal	AC Emergency	Type No.	Price	Type No.	Price	Type No.	Price	Type No.	Price	Type No.	Price	Type No.	Price	Type No.	Price	Type No.	Price
30	110	3	2	1φ, 2 W.	1φ, 2 W.	MG-1	\$146.	PG-1	\$220.	QG-1	\$331.	VG-1	\$712.	XG-1	\$1442.						
	208-220	7½	3	1φ, 3 W. (S/N)	1φ, 3 W. (S/N)	MG-2	150.	PG-2	228.	QG-2	343.	VG-2	736.	XG-2	1492.						
	440-550	10	5	1φ, 3 W. (SWN)	1φ, 3 W. (SWN)	MG-3	148.	PG-3	232.	QG-3	347.	VG-3	758.	XG-3	1526.						
60	110	7½	3	3φ, 3 W.	3φ, 3 W.	MG-3	148.	PG-3	232.	QG-3	347.	VG-3	758.	XG-3	1526.						
	208-220	15	7½	3φ, 4 W. (S/N)	3φ, 4 W. (S/N)	MG-4	152.	PG-4	240.	QG-4	359.	VG-4	782.	XG-4	1576.						
	440-550	25	10	3φ, 4 W. (SWN)	3φ, 4 W. (SWN)	MG-5	169.	PG-5	274.	QG-5	418.	VG-5	948.	XG-5	1817.						
100	110	15	7½	S/N — Solid Neutral. SWN — Switched Neutral																	
	208-220	30	15																		
	440-550	50	25																		
200	208-220	50																			
	440-550	100																			
300	208-220	100																			
	440-550	200																			

MECHANICALLY HELD — NEMA TYPE 1 GENERAL PURPOSE ENCLOSURE

ORDERING INFORMATION REQUIRED				480 Volts Max. Lighting Load												600 Volts Max. HP Load					
1. Class and type number.	2. Form letters.	3. Voltage, frequency and source of both normal and emergency supplies.		Service ▲				30 Ampere		60 Ampere		100 Ampere		200 Ampere		300 Ampere					
				AC Normal	AC Emergency	Type No.	Price	Type No.	Price	Type No.	Price	Type No.	Price	Type No.	Price	Type No.	Price	Type No.	Price	Type No.	Price
				1φ, 2 W.	1φ, 2 W.	MG-6	\$214.	PG-6	\$296.	QG-6	\$417.	VG-6	\$844.	XG-6	\$1592.						
				1φ, 3 W. (S/N)	1φ, 3 W. (S/N)	MG-7	218.	PG-7	304.	QG-7	429.	VG-7	872.	XG-7	1642.						
				1φ, 3 W. (SWN)	1φ, 3 W. (SWN)	MG-8	216.	PG-8	308.	QG-8	433.	VG-8	894.	XG-8	1676.						
				3φ, 3 W.	3φ, 3 W.	MG-8	216.	PG-8	308.	QG-8	433.	VG-8	894.	XG-8	1676.						
				3φ, 4 W. (S/N)	3φ, 4 W. (S/N)	MG-9	220.	PG-9	316.	QG-9	445.	VG-9	918.	XG-9	1726.						
				3φ, 4 W. (SWN)	3φ, 4 W. (SWN)	MG-10	237.	PG-10	350.	QG-10	504.	VG-10	1084.	XG-10	1967.						
				S/N — Solid Neutral. SWN — Switched Neutral																	
				▲DC transfer panels are also available. Contact your local Square D field office.																	

ADDITIONS AND SPECIAL FEATURES				Form	Price	ADDITIONS AND SPECIAL FEATURES				Form	Price
TEST SWITCH (mounted on panel inside enclosure)				Y29	\$ 16.	PLANT EXERCISER Exercises engine generator only for a period of 15 minutes (or any multiple of 15 minutes) every 7 days (or 24 hours) — does not transfer load. Same as Form K12 except load is transferred				K12 K13	\$ 144. 144.
FULL PHASE PROTECTION: FIXED: Transfers load to emergency supply when any phase on the normal supply drops to approximately 70% of nominal voltage. Returns load to normal when all phases on normal supply reach approximately 90% of nominal voltage:						MANUAL RETURN TO NORMAL PUSH BUTTON: Load will not retransfer back to the normal source until button is depressed.				A6	27.
Single phase				Y21-1	40.	PUSH BUTTON TO BY-PASS TIME DELAY FROM EMERGENCY TO NORMAL (Marked "By-Pass Time Delay Back to Normal").				A7	27.
Two phase				Y21-2	80.	4-POSITION SELECTOR SWITCH, HAND CRANK-OFF-AUTO-TEST (Includes contact to initiate cranking).....				C12	68.
Three phase				Y21-3	120.	BATTERY CHARGER WITH AMMETER AND ADJUSTMENT FROM .05 TO 2 AMPERES:					
VARIABLE:						6 volt.....				Y136-1	109.
Single phase				Y15-1	80.	12 volt.....				Y136-2	109.
Two phase				Y15-2	160.	24 volt.....				Y136-3	170.
Three phase				Y15-3	240.	32 volt.....				Y136-4	175.
LOCKOUT RELAY: Prevents connection of load to emergency source until engine generator voltage reaches approximately 90% of nominal				Y135	40.	36 volt.....				Y136-5	180.
PILOT LIGHT IN COVER TO INDICATE SOURCE TO WHICH LOAD IS CONNECTED:						ELECTRICAL INTERLOCKS:*					
Red, marked "Emergency"				P1	27.	NORMAL CONTACTOR:					
Green, marked "Normal"				P2	27.	One additional normally open interlock.....				X10	11.
TIMING RELAYS:						One additional normally closed interlock.....				X20	11.
PREVENTS TRANSFER FROM EMERGENCY TO NORMAL UNTIL VOLTAGE HAS STABILIZED:						Two additional normally open interlocks.....				X30	22.
Pneumatic time delay, 0-180 seconds — all voltages.....				K	84.	Two additional normally closed interlocks.....				X40	22.
Motor driven timer, 0-30 minutes — 120, 208, 220 or 240 volts, 50 hertz.....				K5	110.	One additional normally open and one additional normally closed interlock.....				X50	22.
Motor driven timer, 0-30 minutes — 480 volts, 60 hertz.....				K5	144.	EMERGENCY CONTACTOR:					
IGNORES MOMENTARY POWER OUTAGES 0-180 SECONDS:						One additional normally open interlock.....				X01	11.
Delays transfer from normal to emergency.....				K8	84.	One additional normally closed interlock.....				X02	11.
Delays cranking of emergency generator (includes engine starting contact).....				K9	84.	Two additional normally open interlocks.....				X03	22.
UNLOADED RUNNING TIMER:						Two additional normally closed interlocks.....				X04	22.
Delays shutdown of standby engine generator after retransfer to normal, 0-180 seconds.....				K10	84.	One additional normally open and one additional normally closed interlock.....				X05	22.
CRANKING LIMITER.						ENGINE START CONTACT					
Limits engine cranking when engine fails to start, 0-180 seconds.....				K11	84.	Initiate cranking of emergency generator upon failure of normal source (Contact is on SE relay)				Y138	11.
						Form Letter	30 Amps.	60 Amps.	100 Amps.	200 Amps.	300 Amps.
ENCLOSURES:											
Omit enclosure (deduct from NEMA 1 price).....							\$ 6.	\$ 16.	\$ 30.	\$ 52.	\$300.
Add for NEMA 4 enclosure (add to NEMA 1 price).....							64.	104.	154.	272.	182.
Add for NEMA 12 enclosure (add to NEMA 1 price). Suitable for NEMA type 3 and 3R applications.....							18.	30.	66.	102.	282.
Add for flush mounting enclosure — includes flush lock (add to NEMA 1 price).....							40.	45.	50.	55.	80.
Add for flush lock only.....							24.	24.	24.	24.	24.
Add cover gasket.....						Y137 Y47	18.	26.	34.	60.	106.

*Form numbers for the normal and emergency contactors should be combined. A panel with one additional normally closed interlock or normal and two additional normally open interlocks on emergency would be a Form X23 at \$33.



AC LIGHTING CONTACTORS

A lighting contactor is an electric switch, operated by an electromagnet. The contacts are used to make and break current to tungsten, fluorescent and mercury arc lamps. Thus large current values can be controlled by small pilot devices. Gas filled tungsten lamps have inrush currents which may be as great as 17 times normal operating current. Standard motor control contactors must be de-rated when used in such service to prevent possible contact welding. However, Class 8903 lighting contactors, being specifically designed for such loads, may be applied at their full rating.

Although primarily intended for use on AC, contactors for DC are available on special order.

CLASS
8903

FOR TUNGSTEN, FLUORESCENT, and MERCURY ARC LAMPS

AC 480 VOLTS MAXIMUM LINE VOLTAGE					1 COIL — 24-600 VOLTS AC					DC 250 VOLTS MAXIMUM LINE VOLTAGE				
	Ampere Ratings	No. of Poles	General Purpose Enclosure NEMA Type 1		Flush Mounting General Purpose Enclosure With Plaster Adjustment		Water-tight Enclosure NEMA Type 4		Dust-tight Enclosure NEMA Type 12 (Type 3½)		Open Type			
			Type	Price*	Type	Price*	Type	Price*	Type	Price*	Type	Price*		
ELEC. HELD (Without Interlock)	30	2	MG-1	\$ 36.	MF-1	\$ 49.	MW-1	\$ 74.	MA-1	\$ 49.	MO-1	\$ 34.		
		3	MG-2	39.	MF-2	52.	MW-2	78.	MA-2	52.	MO-2	37.		
		4	MG-3	48.	MF-3	60.	MW-3	86.	MA-3	60.	MO-3	45.		
	60	2	PG-1	73.	PF-1	89.	PW-1	150.	PA-1	97.	PO-1	63.		
		3	PG-2	78.	PF-2	94.	PW-2	155.	PA-2	101.	PO-2	67.		
		4	PG-3	97.	PF-3	113.	PW-3	204.	PA-3	120.	PO-3	86.		
	100	2	QG-1	120.	QF-1	141.	QW-1	229.	QA-1	148.	QO-1	99.		
		3	QG-2	129.	QF-2	149.	QW-2	238.	QA-2	156.	QO-2	107.		
		4	QG-3	159.	QF-3	179.	QW-3	298.	QA-3	186.	QO-3	137.		
	200	2	VG-1	283.	VF-1	315.	VW-1	469.	VA-1	375.	VO-1	238.		
		3	VG-2	302.	VF-2	334.	VW-2	488.	VA-2	394.	VO-2	257.		
		4	VG-3	403.	VF-3	435.	VW-3	566.	VA-3	527.	VO-3	358.		
	300	2	XG-1	598.	XF-1	833.	XW-1	833.	XA-1	833.	XO-1	515.		
		3	XG-2	642.	XF-2	878.	XW-2	878.	XA-2	878.	XO-2	560.		
		4	XG-3	1194.	XF-3	1452.	XW-3	1452.	XA-3	1452.	XO-3	1029.		
MECH. HELD (With coil clearing contacts)	30	2	MG-10	49.	MF-10	69.	MW-10	91.	MA-10	88.	MO-10	47.		
		3	MG-11	52.	MF-11	72.	MW-11	94.	MA-11	92.	MO-11	50.		
		4	MG-12	55.	MF-12	75.	MW-12	97.	MA-12	95.	MO-12	53.		
	60	2	PG-10	115.	PF-10	137.	PW-10	172.	PA-10	168.	PO-10	106.		
		3	PG-11	119.	PF-11	141.	PW-11	198.	PA-11	172.	PO-11	110.		
		4	PG-12	141.	PF-12	163.	PW-12	251.	PA-12	203.	PO-12	132.		
	100	2	QG-10	161.	QF-10	198.	QW-10	273.	QA-10	225.	QO-10	141.		
		3	QG-11	170.	QF-11	207.	QW-11	282.	QA-11	232.	QO-11	150.		
		4	QG-12	203.	QF-12	240.	QW-12	346.	QA-12	293.	QO-12	183.		
	200	2	VG-10	412.	VF-10	467.	VW-10	603.	VA-10	506.	VO-10	348.		
		3	VG-11	465.	VF-11	520.	VW-11	656.	VA-11	559.	VO-11	377.		
		4	VG-12	568.	VF-12	612.	VW-12	759.	VA-12	654.	VO-12	480.		
	300	2	XG-13	720.	XF-13	910.	XW-13	962.	XA-13	910.	XO-13	583.		
		3	XG-14	790.	XF-14	930.	XW-14	1032.	XA-14	930.	XO-14	603.		
		4	XG-15	1281.	XF-15	1547.	XW-15	1547.	XA-15	1547.	XO-15	1111.		

*Prices do not include holding circuit interlock. If interlock is required, order from table below.

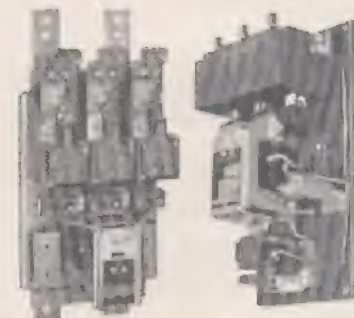
†Same coils as are used in Class 8502 contactors.

‡Suitable for NEMA Type 3 and 3R applications.

ADDITIONS AND SPECIAL FEATURES	Enclosure Type	Form Letters	Type M	Type P	Type Q	Type V	Type X
ON-OFF Push Button:							
Electrically held contactor (includes electrical interlock)	1	A3X1	\$ 19.	\$ 19.	\$ 19.	\$ 19.	\$ 19.
Electrically held contactor (includes electrical interlock)	4, 12	A3X1	33.	33.	33.	33.	33.
Mechanically held contactor	1	A3	8.	8.	8.	8.	8.
Mechanically held contactor	4, 12	A3	22.	22.	22.	22.	22.
Electrical interlocks, one additional normally open	Any	X1	11.	11.	11.	11.	33.
Electrical interlocks, one additional normally closed	Any	X2	11.	11.	11.	11.	33.
Soundproof enclosure	1	G4	58.	65.	80.	110.	150.
Addition of 2-pole control relay to mechanically held device (For use with 2-wire pilot device)	1, 12	R6	51.	51.	51.	80.	90.
	4	R6	78.	78.	78.	106.	118.

ORDERING INFORMATION REQUIRED

1. Class and type number.
2. Voltage, phase and frequency.
3. For special features, form letters from table above. If more than one form letter is used, arrange in alphabetical order. For example, "Class 8903 Type MG-5 Form X1Y14". Describe clearly any modifications not covered by form letters.



300 ampere electrically held lighting contactor

60 ampere mechanically held lighting contactor with coil clearing contacts

AC TEXTILE MACHINE CONTROL

CLASS	(See Page 117)	Class 2510 Types R & S
8922		Class 8922
8924		Class 8924 Type LDG
8925		Class 8925 Types B and C
8926		Class 8925 Types KBA and KCA
		Class 8926 Type HA

Call your Local Square D Field Office for Detailed Information



WELL-GUARD® CONTROL

AC PUMP CONTROL PANELS LINE VOLTAGE TYPE

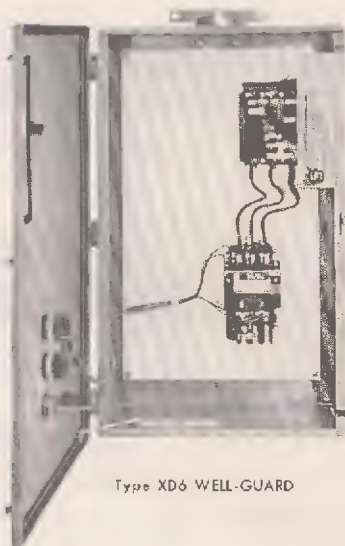
With Three Bimetallic Overload Relays
NEMA 3 Weather-Proof Enclosure

WELL-GUARD Pumping Plant Panels are combination starters specifically designed to control AC motors in irrigation and oil field applications. Both wide and narrow versions are available with either visible blade disconnect switches or circuit breakers. The wide version provides a minimum of 200 sq. inches of unused panel space for field installation of auxiliary equipment.

CLASS
8940



Type C2 WELL-GUARD



Type XD6 WELL-GUARD

ORDERING INFORMATION REQUIRED

- 1—Class and type number.
- 2—Quantity and type number of thermal units.
- 3—Horsepower, voltage, phase, frequency and full load current of motor.
- 4—Control voltage and frequency if different from line voltage.
- 5—Any special features required.

SELECT BIMETALLIC THERMAL UNITS FROM

NEMA Size 1 & 2 — Table 10, Page 224
NEMA Size 3 — Table 12, Page 226
NEMA Size 4 & 5 — Table 8, Page 223
NEMA Size 6 & 7 — Consult field office

COMBINATION FUSIBLE DISCONNECT TYPE

600 VOLTS MAX.		3 POLE			50-60 HERTZ	
NEMA Size	Volts	Max. H. P. Single Element Fuses	Max. H. P. Dual Element Fuses	Fuses Amps	Type	
					Narrow Version	Wide Version
1	230	3 7 1/2	7 1/2	30	OC1	WC1
	460-575	10 7 1/2	10	60	OC2	WC2
2	230	15 7 1/2	15	60†	OC3	WC3
	460-575	25 7 1/2	25	100†	OC4	WC4
3	230	15 15	30	60†	D1	WD1
	460-575	25 25	30	100	D2	WD2
4	230	15 30	30	200†	D3	WD3
	460-575	25 30	30	200	D4	WD4
5	230	40 50	50	200		WE1
	460-575	75 50	50	400		WE2
6	230	75 100	100	400		WE3
	460-575	100 100	100	600		WE4
7	230	150 200	200	400		WF1
	460-575	200 200	200	600		WF2
8	230	150 200	200	400		WF3
	460-575	200 200	200	600		WF4
9	230	150 200	200	400		WG1
	460-575	200 200	200	600		WG2
10	230	150 200	200	400		WG3
	460-575	200 200	200	600		WG4
					Price★	
					\$ 130.	
					132.	
					132.	
					134.	
					175.	
					187.	
					178.	
					189.	
					281.	
					304.	
					287.	
					308.	
					524.	
					573.	
					528.	
					581.	
					1124.	
					1247.	
					1148.	
					1289.	

COMBINATION CIRCUIT BREAKER TYPE

600 VOLTS		3 POLE			50-60 HERTZ		
NEMA Size	Volts	Max. H. P. Rating	Circuit Breaker		Type		Price★
			Frame Size	Trip Setting (Amps)	Narrow Version	Wide Version	
1	230	5	FA	30	BC1	XC1	\$ 134.
		7 1/2	(240V Max.)	50	BC2	XC2	
	460-575	5	FA	30	BC3	XC3	166.
		7 1/2		50	BC4	XC4	
2	230	10	FA	20	BC5	XC5	166.
		15	(240V Max.)	30	BC6	XC6	
	460	10	FA	60	BD3	XD3	206.
		15		90	BD4	XD4	
3	460	20	FA	60	BD3	XD3	206.
		25		70	BD6	XD6	
	460-575	15	FA	40	BD5	XD5	206.
		20	FA	40	BD5	XD5	
4	230	25	FA	100		XE1	291.
		30	KA	125		XE2	
	460	30	FA	90		XE3	291.
		575		60		XE4	
5	460	40	FA	100		XE1	291.
		575		90		XE3	
	460-575	50	FA	100		XE1	291.
		230	40	KA	100			XF1
6	460-575	50		200		XF2	616.
		75	KA	15		XF3	
	460	100	KA	15		XF4	616.
		575		150		XF1	
7	230	75	LA	250		XG1	1401.
		100		350		XG2	
	460	150	LA	250		XG1	1401.
		200		350		XG2	
8	230	150	LA	225		XG3	1401.
		200		300		XG4	
	460	150	*MA	600		XH1	3033.
		200		1000		XH2	
9	460	300	*MA	600		XH1	3033.
		400		1000		XH2	
	575	400	*MA	600		XH1	3033.
		230	300	*MA	1000			XJ1
10	460-575	600	*MA	000		XJ1	4087.

AC WELDER CONTROL

CLASS
8990
8991
8992

The welder control listed on this page is normally in stock. This listing includes only standard, widely used devices. A much more extensive listing of solid state, electronic and magnetic welder control is furnished in the Square D Welder Control catalog.

25-60 HERTZ CLASS 8990 HIGH SPEED WELDER CONTACTORS 110-550 VOLTS

NEMA Size	No. of Poles	Ampere Rating Nominal	NEMA Type 1		Open Type	
			Type	Price	Type	Price
0W	1	50	DG-1	\$ 106.	DO-1	\$ 86.
1W	1	100	HBG-1	187.	HBO-1	162.
2W	1	150	HCG-3	254.	HCO-3	229.



Type HBG-1

Saftron® Timing Relay Units | Saftron® Sequence Weld Timers

60 HERTZ CLASS 8991 600 VOLTS MAX.

Nameplate Marking	Time Delay Alter:	Open Type		NEMA Type	General Purpose Enclosure 120 Volt Initiation Standard	
		Type	Price		Type	Price
Squeeze Time	Energ.	ATO-8	\$ 72.	1A	TBS-6	\$ 145.
Weld Time	Energ.	ATO-9	72.		TBS-13	110.
Held Time	Energ.	ATO-10	72.		TBS-10	440.
Off Time	De-energ.	ATO-11	72.		24 Volt Initiation Standard	
Weld Interval	Energ.	ATO-12	72.	1AX	Type	Price
Weld Timer	Energ.	△ATO-15	80.			
	Energ.	★ATO-16	72.			
	Energ.	△ATO-17	80.			
	De-energ.	△ATO-18	80.	3BX	TBS-20	\$ 132.
					TBS-22	100.
					TBS-21	400.

★Invertible magnet for time delay after energ. or de-energ.
△Interlock provided.

Multi-Pole High Speed Relays

50-60 HERTZ CLASS 8990 — 600 VOLTS MAX.

No. of Poles	Open Type	
	Type	Price
2	ARO-20	\$ 24.
3	ARO-30	28.
4	ARO-40	30.
5	ARO-50	41.
8	ARO-80	53.

Contacts are easily converted from normally open to normally closed (or vice versa) without the addition of extra parts.

Type E Solid State Non-Synchronous Control

230/460 VOLTS CLASS 8992 60 HERTZ

NEMA Type	Description	Type	Price With Ignitron Tubes		
			Size B	Size C	Size JC
N2-600	Relay Firing	▲ECG-1	\$ 958.	\$1093.	\$1248.
N2H-600	SCR Delayed Firing Heat Control	▲ECG-2	1108.	1243.	1398.

▲Add Form W2 to Type number when 2 stage initiation is required. No charge when specified on order.

Type E Solid State Sequence Weld Timer

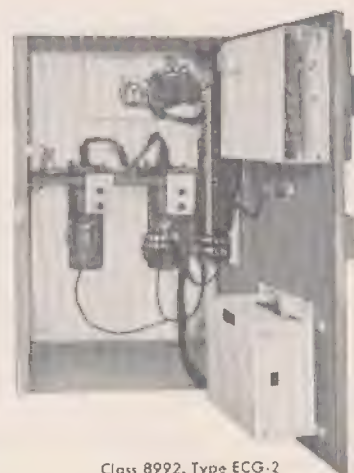
230/460 VOLTS CLASS 8991 60 HERTZ

3B	Relay Firing.	▲EG-1	\$400.
----	---------------	-------	--------

▲Add Form W2 to Type number when 2 stage initiation is required. No charge when specified on order.

ORDERING INFORMATION REQUIRED

- 1—Specify class and type number.
- 2—Give control circuit voltage and frequency.



Class 8992, Type ECG-2



STANDARD DUTY CONTROL STATIONS

Standard duty control stations are designed for use with magnetic motor starters to govern the starting, stopping, or reversing of all types of electric motors. Push buttons are momentary contact unless otherwise indicated. Selector switches are maintained contact. (See page 164 for dimensions.)

CLASS
9001

GENERAL PURPOSE ENCLOSURES

600 VOLTS MAX. AC OR DC

No. of Units	Nameplate Markings and Features	Surface Mounting NEMA Type 1		Flush Mounting without Pullbox ▲		Stainless Steel Flush Plate with Pullbox		Molded Pendant Type with Mechanical Interlock Ⓢ		† Cont. Sym.
		Type	Price	Type	Price	Type	Price	Type	Price	
1	Start.....	B-32	\$ 6.00	BB-1	\$ 7.50	BF-19	\$11.00			1
	Stop.....	B-33	6.00	BB-2	7.50	BF-20	11.00			3
	Stop (Lockout).....	B-38	9.00	BB-3	10.50					3
	Red Pilot Light: 115/230 V. AC or DC	B-49	14.00			BF-21	19.00			96 ±
	Off-On (2 Pos. Sel. Switch).....	C-46 *	6.00	CB-46*	7.50					97 ±
	Hand-Off-Auto (3 Pos. Sel. Switch).....	C-47 *	6.00	CB-47*	7.50					14
2	Hand-Off-Auto (Bakelite Enclosure for Knockout Mtg.).....			LB-3	8.00					
	Start-Stop.....	B-30 ★	\$ 6.00	BB-4	\$ 7.50	BF-13	\$11.00	B64Y Δ	\$ 8.00	5
	Start-Stop (Mushroom on Stop).....	B-50	9.00	BB-10	10.50					5
	Start-Stop (Lockout on Stop).....	B-31	9.00	BB-5	10.50					5
	Forward-Reverse.....	B-34	7.50	BB-6	9.00	BF-22	12.50	B61Y	8.00	7
	Up-Down.....	B-35	7.50	BB-7	9.00	BF-23	12.50	B60Y	8.00	7
	Open-Close.....	B-36	7.50	BB-8	9.00	BF-24	12.50			7
	On-Off.....	B-37	7.50	BB-9	9.00	BF-25	12.50	B66Y Δ	8.00	7
	Start-Stop (Maintained Contact).....	C-41	9.00	CB-1	10.50					10
	On-Off (Maintained Contact).....	C-42	9.00	CB-2	10.50					10
	Manual-Auto (Maintained Contact).....	C-43	9.00	CB-3	10.50					10
	On-Off, Tumbler Switch with Red Pilot Light, 115/230 V. AC or DC.....					BF-17	25.00			15
	Forward-Reverse-Stop.....	RK-2A	\$12.00	RK-3A	\$13.50					109
	Up-Down-Stop.....	RK-2B	12.00	RK-3B	13.50					109
	Open-Close-Stop.....	RK-2C	12.00	RK-3C	13.50					109
3	High-Low-Stop.....	RK-2D	12.00	RK-3D	13.50					109
	Forw.-Rev.-Stop (Lockout on Stop).....	RK-4A	15.00							109
	Up-Down-Stop (Lockout on Stop).....	RK-4B	15.00							109
	Open-Close-Stop (Lockout on Stop).....	RK-4C	15.00							109
	High-Low-Stop (Lockout on Stop).....	RK-4D	15.00							109
	Start-Stop—With Red Pilot Light 115/230 V. AC or DC.....	B-39	22.00			BF-14	22.00			13
	Start-Stop, with Red P. Light 115/230 V. AC or DC, Maint. Contact.....	C-39	25.00							10



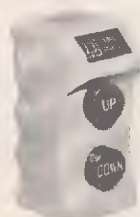
Type B-30



Type RK-2B



Type BF-14



Type B62Y
Molded Pendant Type



Type OG-12

SPECIAL PURPOSE ENCLOSURES

600 VOLTS MAX. AC OR DC

No. of Units	Nameplate Markings and Features	Water-Tight and Dust-Tight Enclosures NEMA Type 4			For Hazardous Locations Class I, Groups B, C & D or Class II Groups E, F and G NEMA Types 7 and 9			Weather Resistant Molded Pendant Type with Mechanical Interlock Ⓢ		
		Type	Price	Sym.	Type	Price	Sym.	Type	Price	Sym.
1	Start.....	BW-46	\$19.	1	BR-32	\$23.	1			
	Stop.....	BW-47	19.	3						
	Stop (Lockout).....	BW-48	19.	3	BR-38	23.	3			
2	Start-Stop.....	BW-40	\$19.	5				B65Y Δ	\$ 9.50	5
	Start-Stop (Mushroom Stop).....	BW-50	22.	5						
	Start-Stop (Lockout on Stop).....	BW-41	19.	5	BR-31	\$ 23.	5			
	Start-Stop (Lever Operated).....	BW-49	19.	5						
	Forward-Reverse.....	BW-42	19.	7	BR-34	23.	7	B63Y	9.50	7
	Up-Down.....	BW-43	19.	7	BR-35	23.	7	B62Y	9.50	7
	Open-Close.....	BW-44	19.	7	BR-36	23.	7			
	On-Off.....	BW-45	19.	7	BR-37	23.	7	B67Y Δ	9.50	7
	Start-Stop (Maintained Contact).....	CW-5	22.	10	CR-41	23.	10			
	On-Off (Maintained Contact).....	CW-6	22.	10	CR-42	23.	10			
	Manual-Auto (Maintained Contact).....	CW-7	22.	10						
	On-Off (Lever operated).....	CW-8	22.	10						

*Rated 600 V. AC, 250 V. DC

▲ Pullbox not available.

± Other contact sequence available.

★ Multi-pack quantity — 20.

Ⓢ Enclosures are yellow. To order black or red enclosures substitute letter "B" or "R" respectively for letter "Y" in Type No.

Δ Without mechanical interlock.

† See symbols on page 164.

INSTRUMENT TYPE INCANDESCENT PILOT LIGHT (3/32" mounting hole required)

Voltage	Red Lens	Green Lens	Yellow Lens	White Lens	Price
12 V.	OR-12	OG-12	OY-12	OW-12	\$ 2.
24 V.	OR-24	OG-24	OY-24	OW-24	
120 V.	OR-120	OG-120	OY-20	OW-120	

ORDERING INFORMATION REQUIRED: Class and type number.



HEAVY DUTY CONTROL STATIONS

**CLASS
9001**

Heavy duty stations are intended for use in the control circuits of magnetic starters or control panels and are available in almost any combinations of momentary or maintained contact push button units, selector switches, and indicating lights. (See page 164 for dimensions.)

600 VOLTS AC

600 VOLTS DC

Nameplate Marking	Description	Cont. Symbol	General Purpose Surface Mounting NEMA Type 1		General Purpose Flush Mounting Without Pullbox ▲		General Purpose Flush Mounting With Pullbox		Water-tight & Dust-Tight NEMA Type 4†		Class I, Groups B, C and D Class II, Groups E, F and G NEMA Types 7 & 9†		
			Type	Price	Type	Price	Type	Price	Type	Price	Type	Price	
ONE UNIT													
Start.....	Lockout	16	GG-101	\$11.	GF-101	\$11.	GFP-101	\$17.	GW-101	\$23.	GR-101	\$27.	
Stop.....			GG-102	11.	GF-102	11.	GFP-102	17.	GW-102	23.	GR-102	27.	
Stop.....			GG-103	14.	GF-103	14.	GFP-103	20.	GW-103	23.	GR-103	27.	
Reset.....			GG-104	11.	GF-104	11.	GFP-104	17.	GW-104	23.	GR-104	27.	
Jog.....			GG-105	11.	GF-105	11.	GFP-105	17.	GW-105	23.	GR-105	27.	
Stop.....	Mushroom Button.....	16	GG-107	14.	GF-107	14.	GFP-107	20.	GW-107	26.	GR-107	30.	
Start.....	Mushroom Button.....		GG-108	14.	GF-108	14.	GFP-108	20.	GW-108	26.	GR-108	30.	
Stop.....	Mushroom, Lockout		GG-115	17.	GF-115	17.	GFP-115	23.	GW-115	26.	GR-115	30.	
Safe Run.....	Selector Switch.....	18	GG-116	12.	GF-116	12.	GFP-116	18.	GW-116	24.	GR-116	28.	
High-Low.....			GG-117	12.	GF-117	12.	GFP-117	18.	GW-117	24.	GR-117	28.	
Open-Close.....			GG-118	12.	GF-118	12.	GFP-118	18.	GW-118	24.	GR-118	28.	
Off-On.....			GG-119	12.	GF-119	12.	GFP-119	18.	GW-119	24.	GR-119	28.	
Up-Down.....	Selector Switch	19	GG-120	12.	GF-120	12.	GFP-120	18.	GW-120	24.	GR-120	28.	
For - Rev.....			GG-121	12.	GF-121	12.	GFP-121	18.	GW-121	24.	GR-121	28.	
Jog Run.....			GG-122	12.	GF-122	12.	GFP-122	18.	GW-122	24.	GR-122	28.	
Hand-Off-Auto.....	Selector Switch.....	19	GG-123	12.	GF-123	12.	GFP-123	18.	GW-123	24.	GR-123	28.	
Fast-Slow.....			GG-124	12.	GF-124	12.	GFP-124	18.	GW-124	24.	GR-124	28.	
Man.-Auto.....			GG-126	12.	GF-126	12.	GFP-126	18.	GW-126	24.	GR-126	28.	
Red Pilot Light: 120 V., 60 Hz., 110 V., 50 Hz., 240 V., 60 Hz., 220 V., 50 Hz., 480 V., 60 Hz., 440 V., 50 Hz., 600 V., 60 Hz., 550 V., 50 Hz.			22	GG-127A	18.	GF-127A	18.	GFP-127A	24.	GW-127A	30.	GR-127A	34.
				GG-127B		GF-127B		GFP-127B		GW-127B		GR-127B	
				GG-127C		GF-127C		GFP-127C		GW-127C		GR-127C	
				GG-127D		GF-127D		GFP-127D		GW-127D		GR-127D	
Red Pilot Light: 120 V., AC or DC 240 V., AC or DC			23	GG-128	18.	GF-128	18.	GFP-128	22.	GW-128	28.	GR-128	32.
				GG-129		GF-129		GFP-129		GW-129		GR-129	

TWO UNIT

Start-Stop.....	Lockout on Stop.....	25	GG-201	\$17.	GF-201	\$17.	GFP-201	\$23.	GW-201	\$29.	GR-201	\$33.
For-Rev.....			GG-202	17.	GF-202	17.	GFP-202	23.	GW-202	29.	GR-202	33.
Up-Down.....			GG-203	17.	GF-203	17.	GFP-203	23.	GW-203	29.	GR-203	33.
Open-Close.....			GG-204	17.	GF-204	17.	GFP-204	23.	GW-204	29.	GR-204	33.
High-Low.....			GG-205	17.	GF-205	17.	GFP-205	23.	GW-205	29.	GR-205	33.
Start-Stop.....	Maintained Contact.....	107	GG-206	20.	GF-206	20.	GFP-206	26.	GW-206	32.	GR-206	36.
On-Off.....			GG-210	17.	GF-210	17.	GFP-210	23.	GW-210	29.	GR-210	33.
Start-Stop.....			GG-213	17.	GF-213	17.	GFP-213	23.	GW-213	29.	GR-213	33.
On-Off.....	Maintained Contact.....	107	GG-214	17.	GF-214	17.	GFP-214	23.	GW-214	29.	GR-214	33.
Start-Stop.....	Mushroom Button on Stop.....	25	GG-215	20.	GF-215	20.	GFP-215	26.	GW-215	32.	GR-215	36.
Open-Close.....	Maintained Contact.....	107	GG-220	17.	GF-220	17.	GFP-220	23.	GW-220	29.	GR-220	33.
Jog-Stop.....	Lockout on Stop.....	25	GG-221	20.	GF-221	20.	GFP-221	26.	GW-221	32.	GR-221	36.
Safe-Run, Start	1 Sel. Sw., 1 Button.....	18	GG-222	18.	GF-222	18.	GFP-222	24.	GW-222	27.	GR-222	31.
Red Pilot Light, 1 Button: 120 V., 60 Hz., 110 V., 50 Hz., 240 V., 60 Hz., 220 V., 50 Hz., 480 V., 60 Hz., 440 V., 50 Hz., 600 V., 60 Hz., 550 V., 50 Hz.			GG-226A	24.	GF-226A	24.	GFP-226A	30.	GW-226A	33.	GR-226A	37.
			GG-226B		GF-226B		GFP-226B		GW-226B		GR-226B	
			GG-226C		GF-226C		GFP-226C		GW-226C		GR-226C	
			GG-226D		GF-226D		GFP-226D		GW-226D		GR-226D	
Red Pilot Light, 1 Button: 120 V., AC or DC.....			GG-227	22.	GF-227	22.	GFP-227	28.	GW-227	31.	GR-227	35.
			GG-228		GF-228		GFP-228		GW-228		GR-228	
Red Pilot Light, 1 Button: 120 V., 60 Hz., 110 V., 50 Hz., 240 V., 60 Hz., 220 V., 50 Hz., 480 V., 60 Hz., 440 V., 50 Hz., 600 V., 60 Hz., 550 V., 50 Hz.			GG-229A	24.	GF-229A	24.	GFP-229A	30.	GW-229A	33.	GR-229A	37.
			GG-229B		GF-229B		GFP-229B		GW-229B		GR-229B	
			GG-229C		GF-229C		GFP-229C		GW-229C		GR-229C	
			GG-229D		GF-229D		GFP-229D		GW-229D		GR-229D	
Red Pilot Light, 1 Button: 120 V., AC or DC.....			GG-230	22.	GF-230	22.	GFP-230	28.	GW-230	31.	GR-230	35.
			GG-231		GF-231		GFP-231		GW-231		GR-231	

All push button units are momentary contact; all selector switch units maintained contact. Transformer and full voltage type pilot lights occupy space equal to that required for one push button unit.

†NEMA Type 4, 7 and 9 stations as standard have provision for padlocking the "Stop" button in the depressed position.

▲See symbols on page 164.

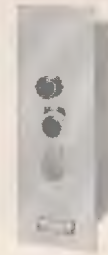
▲Separate pullboxes listed on page 163.



General Purpose Surface Mounted



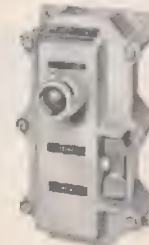
General Purpose Flush Mounted with Pullbox



General Purpose Flush Mounted



NEMA Type 4-5



NEMA Type 7-9

ORDERING INFORMATION REQUIRED: Order control stations by class and type number.



HEAVY DUTY CONTROL STATIONS

Heavy duty stations are intended for use in the control circuits of magnetic starters or control panels and are available in almost any combination of momentary or maintained contact push button units, selector switches, and indicating lights. (See page 164 for dimensions.)

CLASS
9001

600 VOLTS AC

600 VOLTS DC

Description		Cont. Symbol	General Purpose Surface Mounting NEMA Type 1		General Purpose Flush Mounting Without Pullbox ▲		General Purpose Flush Mounting With Pullbox		Water-tight and Dust-tight NEMA Type 4 †		Class I, Groups B, C and D Class II, Groups E, F and G NEMA Types 7 & 9 †	
Nameplate Marking	Features		Type	Price	Type	Price	Type	Price	Type	Price	Type	Price
THREE UNIT												
For.-Rev.-Stop.			GG-301	\$22.	GF-301	\$22.	GFP-301	\$31.				
Up-Down-Stop.			GG-302	22.	GF-302	22.	GFP-302	31.				
Open-Close-Stop.			GG-303	22.	GF-303	22.	GFP-303	31.				
High-Low-Stop.			GG-304	22.	GF-304	22.	GFP-304	31.				
Start-Jog-Stop.	Lockout on Stop . . .		GG-305	25.	GF-305	25.	GFP-305	34.	GW-305	\$44.	GR-305	\$58.
Up-Down-Run.			GG-306	22.	GF-306	22.	GFP-306	31.	GW-306	44.	GR-306	58.
Open-Close-Stop.	Lockout on Stop. . . .		GG-307	25.	GF-307	25.	GFP-307	34.	GW-307	44.	GR-307	58.
High-Low-Stop.	Lockout on Stop. . . .	8	GG-308	25.	GF-308	25.	GFP-308	34.	GW-308	44.	GR-308	58.
Start-Jog-Stop.			GG-309	22.	GF-309	22.	GFP-309	31.				
For.-Rev.-Stop.	Lockout on Stop. . . .		GG-310	25.	GF-310	25.	GFP-310	34.	GW-310	44.	GR-310	58.
Up-Down-Stop.	Lockout on Stop. . . .		GG-311	25.	GF-311	25.	GFP-311	34.	GW-311	44.	GR-311	58.
Start-Jog-Stop.	Jog Attachment.	33	GG-316	25.	GF-316	25.	GFP-316	34.				
For.-Rev., Start-Stop			GG-317		GF-317		GFP-317		GW-350		GR-350	
High-Low, Start-Stop		19	GG-318		GF-318		GFP-318		GW-351		GR-351	59.
Up-Down, Start-Stop	Sel. Sw., 2 Push Buttons	25	GG-319	23.	GF-319	23.	GFP-319	32.	GW-352	45.	GR-352	
Jog-Run, Start-Stop			GG-320		GF-320		GFP-320		GW-353		GR-353	
Start-Stop.	Red Pilot Light, 2 Push Buttons: 120 V., 60 Hz., 110 V., 50 Hz. 240 V., 60 Hz., 220 V., 50 Hz. 480 V., 60 Hz., 440 V., 50 Hz. 600 V., 60 Hz., 550 V., 50 Hz.	22	GG-328A	25.	GF-328A	29.	GFP-328A	38.	GW-334A	51.	GR-334A	
		25	GG-328B		GF-328B		GFP-328B		GW-334B		GR-334B	
			GG-328C		GF-328C		GFP-328C		GW-334C		GR-334C	65.
			GG-328D		GF-328D		GFP-328D		GW-334D		GR-334D	
Start-Stop.	Red Pilot Light, 2 Push Buttons: 120 V., AC or DC 240 V., AC or DC	23	GG-329	27.	GF-329	27.	GFP-329	36.	GW-335	49.	GR-335	63.
		25	GG-330		GF-330		GFP-330		GW-336		GR-336	

FOUR UNIT

High-Sec.-Low-Stop...	Lockout on Stop...	38	GG-401	\$27.	GF-401	\$27.	GFP-401	\$36.	GW-402	\$53.	GR-402	\$90.
High-Sec.-Low-Stop...			GG-402	30.	GF-402	30.	GFP-402	39.				
High-Low, For.-Rev.-Stop...			GG-410		GF-410		GFP-410		GW-451		GR-451	
For.-Rev., High-Low-Stop...	1 Selector Sw., 3 Push Buttons.	19	GG-411	28.	GF-411	28.	GFP-411	37.	GW-452	54.	GR-452	81.
High-Low, Up-Down-Stop...		8	GG-412		GF-412		GFP-412		GW-453		GR-453	

FIVE UNIT

High-Third-Sec.-Low-Stop		39	GG-501	\$32.	GF-501	\$32.	GFP-501	\$44.				
High-Third-Sec.-Low-Stop	Lockout on Stop...		GG-502	35.	GF-502	35.	GFP-502	47.				

All push button units are momentary contact; all selector switch units maintained contact. Transformer and full voltage type pilot lights occupy space equal to that required for one push button unit.

† NEMA Type 4, 7, and 9 stations as standard have provision for padlocking the "Stop" button in the depressed position.

© See symbols on page 164.

PULL BOXES FOR TYPE GF DEVICES

CLASS 9001

Number of Units	Type	Price	Number of Units	Type	Price
1	FP-1	\$6.	5	FP-5	\$12.
2	FP-2	6.	6	FP-6	12.
3	FP-3	9.	7	FP-7	18.
4	FP-4	9.	8	FP-8	18.

HEAVY DUTY CONTROL UNITS

Push Buttons — Selector Switches — Pilot Lights

0-600 VOLTS

OPEN TYPE

CLASS 9001

Function	Description	Vert. Mtg.	Side by Side Mtg.	Price	Cont. Sym.
		Type	Type		
Push Button Units	Black button—double circuit...	GO-1		\$3.70	16
	Red button—single circuit N.C.	GO-2		3.70	3
	Red button—double circuit...	GO-3		3.70	16
	Black button—3 point contacts.	GO-4		6.70	40
	Black button—2 poles N.O.	GO-7		6.70	41
	Red button—2 poles N.C.	GO-8		6.70	42
Selector Switch Units	Single pole, double throw...	HO-1	HO-7	\$4.70	17
	Double pole, single throw...	HO-2	HO-8	4.70	18
	Single pole, double throw...	HO-3	HO-9	4.70	19
	Single pole, double throw...	HO-4	HO-10	4.70	20
	Double pole, single throw...	HO-5	HO-11	4.70	21

Heavy duty open type control units or pilot lights do not include nameplates, nor do they include mounting provisions for nameplates.

© See symbols on page 164.

*OPEN TYPE PILOT LIGHTS AND COLOR CAPS

CLASS 9001

TRANSFORMER TYPE				RESISTOR TYPE — AC or DC					
Frequency		Type	Price	Volts		Type		Price	
60 Hz.	50 Hz.			120	240	PO-41	PO-42	\$ 8.00	
120 V.	110 V.	PO-21	\$10.00	COLOR CAPS					
240 V.	220 V.	PO-22							
480 V.	440 V.	PO-23							
600 V.	550 V.	PO-24							
25 Hertz									
110 V.		PO-31	Color	Type	Price	Color	Type	Price	
220 V.		PO-32	Amber	A4	\$.70	Green	G4	\$.70	
			Blue	B4		Red	R4		
			Clear	C4		White	W4		

*As standard pilot lights are supplied without a color cap. Separate plastic snap in color caps for customer panel can be ordered from Table above.

ORDERING INFORMATION REQUIRED: Order control stations by class and type number.



SCHEDULE DS-1 DISCOUNT

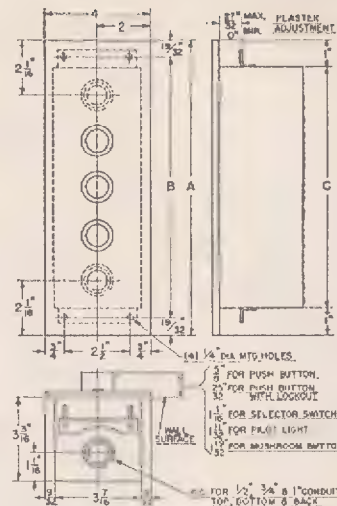
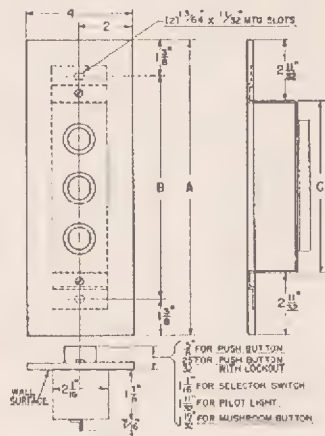
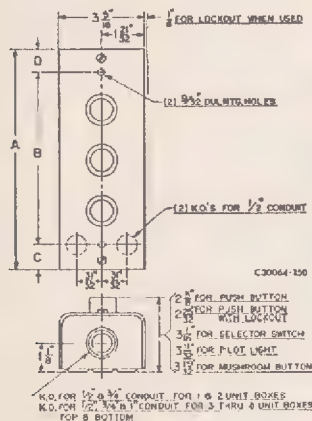
PAGE 163

HEAVY DUTY CONTROL STATIONS

DIMENSIONS and CONTACT SYMBOLS

CLASS
9001

GENERAL PURPOSE ENCLOSURES



SURFACE MOUNTING

No. of Units	Dimensions			
	A	B	C	D
1	4 3/8	2 5/8	2 9/16	2 7/16
2	6 1/4	4 1/2	2 9/16	2 7/16
3	8 3/8	6 3/8	3 1/16	3 1/16
4	10 1/4	8 1/4	3 1/16	3 1/16
5	12 1/8	10 1/8	3 1/16	3 1/16
6	14	12	3 1/16	3 1/16
7	15 7/8	13 7/8	3 1/16	3 1/16
8	17 3/4	15 3/4	3 1/16	3 1/16

FLUSH MOUNTING WITHOUT PULLBOX

No. of Units	Dimensions		
	A	B	C
1	7 7/16	4 1 3/16	2 7/8
2	9 7/16	6 1 3/16	4 3/8
3	11 7/16	8 1 3/16	6 5/8
4	13 7/16	10 1 3/16	8 1/2
5	15 7/16	12 1 3/16	10 3/8
6	16 1 3/16	14 1 3/16	12 1/4
7	18 1 3/16	16 1 3/16	14 1/8
8	20 1 3/16	17 1 3/16	16

FLUSH MOUNTING WITH PULLBOX

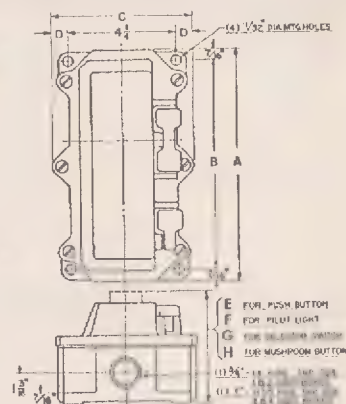
No. of Units	Dimensions		
	A	B	C
1	7 7/16	6 3/8	5 9/16
2	9 7/16	8 1/4	7 7/16
3	11 7/16	10 1/8	9 5/8
4	13 7/16	12	11 3/8
5	15 7/16	13 7/8	13 1/4
6	16 1 3/16	15 3/8	14 1 3/8
7	18 1 3/16	17 5/8	16 1 3/8
8	20 1 3/16	19 1/2	18 1 1/8

WATER-TIGHT, DUST-TIGHT AND HAZARDOUS LOCATIONS ENCLOSURES

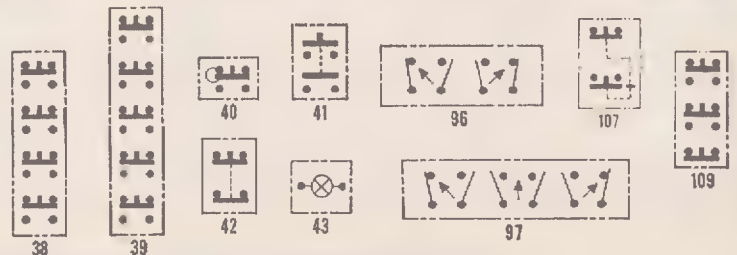
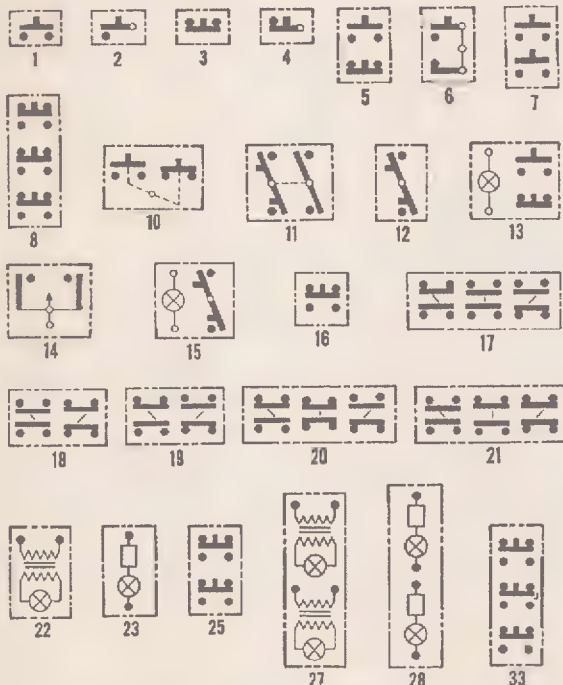
No. of Units	Dimensions			
	A	B	C	D
1	5 1/8	4 1/4	5 1/8	7 1/8
2	7 1/8	6 1/4	5 1/8	9 1/8
3	9 1/8	8 1/4	5 1/8	11 1/8
4	11 1/8	10 1/4	5 1/8	13 1/8

Dim	Water-tight and Dust-tight	Hazardous Locations
E	3 1/16	3 7/8
F	4 2 1/16	4 1 1/16
G	4 3/4	5 1/2
H	5 5/8	5 1 1/2

APPROXIMATE DIMENSIONS



CONTACT SYMBOLS



TYPE K — OIL-TIGHT CONTROL UNITS

CLASS
9001

TABLE 1 — SIMPLIFIED SELECTION GUIDE

Unless otherwise indicated, operators, contact blocks, and legend plates are listed separately and must be ordered separately.
Popular items are shown in bold faced type.

Description	Table	Page	Description	Table	Page
Non-illuminated Push Buttons (Type KR)	2	165	Pilot Lights — Standard, Push-to-Test includes		
Illuminated Push Buttons (Type K1L, K2L)	3	165	Factory Prewired Contact Block (Type KP, KT)	16	170
Non-illuminated Selector Switches			Dual Function Operator (Type KR 6, 7)	17	170
2-Position (Type KS)	4	166	Push Pull Operator — Includes Pull-to-Start		
3-Position (Type KS)	5	166	Push-to-Stop Nameplate (Type KR 8, 9)	18	170
4-Position (Type KS)	8	167	Joy Stick Operators	19	170
Illuminated Selector Switches			Special Purpose Operators and Accessories		171
2-Position (Type K-J)	11	167	Accessories — Inserts, Knobs, Color Caps, etc.		172
3-Position (Type K-J)	12	168	Legend Plates		173
4-Position (Type K-J)	13	168	Control Stations, Enclosures — NEMA 12		174
Selector Push Buttons (Type KQ)	14	169	Control Stations, Enclosures — NEMA 4		175
Contact Blocks (Type KA)	15	169			

TABLE 2 — STANDARD PUSH BUTTONS — NON-ILLUMINATED








Insert Color							Knob Color				
	Type	Price*	Type	Price*	Type	Price*		Type	Price*	Type	Price*
Black Red Green Brown Yellow Orange Blue White Grey Universal (All Colors)	KR-1B KR-1R KR-1G KR-1N KR-1Y KR-1S KR-1L KR-1W KR-1E KR-1U	\$2.70	KR-2B KR-2R KR-2G KR-2N KR-2Y KR-2S KR-2L KR-2W KR-2E KR-2U	\$2.70	KR-3B KR-3R KR-3G KR-3N KR-3Y KR-3S KR-3L KR-3W KR-3E KR-3U	\$2.70	Black Red Green Brown Yellow Orange Blue White	KR-4B KR-4R KR-4G KR-4N KR-4Y KR-4S KR-4L KR-4W	\$5.70	KR-5B KR-5R KR-5G KR-5N KR-5Y KR-5S KR-5L KR-5W	\$5.70

TABLE 3 — PUSH BUTTONS — ILLUMINATED

*COLOR CAP CODE LETTER (USE TO COMPLETE TYPE NOS. BELOW)											
Color	Standard	Illuminated Mushroom Knob		Description	Voltage and Frequency	Lamp No.	Rated VA				
		1 3/8" Dia.	2 1/4" Dia.					Type	Price*	Type	Price*
Red Green Amber Blue Clear White Yellow	R G A L C W Y	R20 G20 A20 L20 C20 W20 Y20	R21 G21 A21 L21 C21 W21 Y21	Transformer Type	120 V., 60 Hz.; 110 V., 50 Hz. 110 V., 25-30 Hz. 208-220 V., 50-60 Hz. 220 V., 25-30 Hz. 240 V., 60 Hz.; 220 V., 50 Hz. 480 V., 60 Hz.; 440 V., 60 Hz. 600 V., 60 Hz.; 550 V., 50 Hz.	GE 44 GE 1490 GE 44 GE 1490 GE 44 GE 44 GE 44	3 @ 60 Hz., 6 @ 50 Hz. 4 @ 25 Hz. 3 @ 60 Hz., 6 @ 50 Hz. 5 @ 25 Hz. 3 @ 60 Hz., 6 @ 50 Hz. 3 @ 60 Hz., 6 @ 50 Hz. 3 @ 60 Hz., 6 @ 50 Hz.	K1L-10 K1L-20 K1L-30 K1L-40 K1L-70 K1L-50 K1L-60	\$11.70	K2L-10 K2L-20 K2L-30 K2L-40 K2L-70 K2L-50 K2L-60	\$10.70
Full Voltage Type	6 V., AC or DC 12 V., AC or DC 18 V., AC or DC 24 V., AC or DC 28 V., AC or DC 48 V., AC or DC 60 V., AC or DC 120 V., AC or DC	Sylvania 6PSB 12PSB G.E. 18E Sylvania 24 PSB 28 PSB 48 PSB 60 PSB 120 PSB	.840 2.04 .810 1.75 1.12 2.54 3.00 3.00					K1L-31 K1L-32 K1L-33 K1L-34 K1L-35 K1L-36 K1L-37 K1L-38	\$ 9.70	K2L-31 K2L-32 K2L-33 K2L-34 K2L-35 K2L-36 K2L-37 K2L-38	\$ 8.70

*Complete type number by inserting appropriate color cap code letter listed above. Illuminated mushroom knob can be used on operator without guard (K2L-) only.

*Prices DO NOT include legend plate. Order separate legend plate from Page 173.

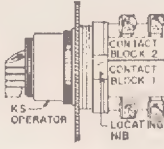
Note: Operators DO NOT include contact blocks. Order separately from Page 169, Table 15.



OIL-TIGHT CONTROL UNITS—TYPE K

CLASS
9001

TABLE 4 — SELECTOR SWITCHES — TWO POSITION NON-ILLUMINATED

Symbol	Description	Location	Type of Operator	Symbol Applicable	Cam	Type	Price *
X O O X	One (1) KA-1 Block. Mount in Pos. 2		Manual Return Standard Knob....	44, 45	A	KS-11▲	\$ 3.70
			Coin Operated....	44, 45	A	KS-11T▲	5.70
			Gloved Hand Knob Key Operated (Code 1, 2 or 3)	44, 45	A	KS-11F▲ KS-11K★	3.70 8.70
X O O X X O O X	Two (2) KA-1 Blocks. Mount in Pos. 1 & 2		Spring Return from Left Standard Knob....	44, 45	E	KS-25▲	5.70
			Gloved Hand Knob	44, 45	E	KS-25F▲	5.70
			Key Operated....	44, 45	E	KS-25K2	11.70
O X X O	One (1) KA-1 Block. Mount in Pos. 2		Spring Return from Right Standard Knob....	99, 100	D	KS-34▲	5.70
			Gloved Hand Knob	99, 100	D	KS-34F▲	5.70
			Key Operated.	99, 100	D	KS-34K1	11.70
O X X O O X X O	Two (2) KA-1 Blocks. Mount in Pos. 1 & 2						

*Operator only. Does not include contact blocks. Blocks are shown in conjunction with selector switch symbols for clarity only.
Order blocks from Page 169, Table 15.

TABLE 5 — SELECTOR SWITCHES — THREE POSITION NON-ILLUMINATED

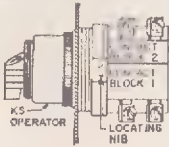


		NOTE: Type Numbers listed below do not include contact blocks. Contact blocks are shown in conjunction with selector switch symbols for clarity. Order blocks from Page 169, Table 15.												
Description		Contact Block Number	Center ↙ ↑ ↘ Left Right		Center ↙ ↑ ↘ Left Right		Center ↙ ↑ ↘ Left Right		Center ↙ ↑ ↘ Left Right		Center ↙ ↑ ↘ Left Right		Price	
Contact Block Only	Order One Type KA-1 Contact Block  #2	#2	X O O	X O O	O O X	X O O	O O X	X O O					\$3.00	
			O X X	O O X	O X O	O X O	O X O	O X O						
			Symbol 48 (Cam B)	Symbol 52 (Cam C)	Symbol 56 (Cam D)	Symbol 60 (Cam E)								
Contact Block Only	Order Two Type KA-1 Contact Blocks (Mount Side-By-Side)  #1 #2	#2	X O O	X O O	O O X	X O O	O O X	X O O	X O O	X O O			6.00	
			O X X	O O X	O X O	O X O	O X O	O O X	O X X					
			O O X	X O O	O O X	X O O	O X O	O X O	O O X	O X X				
			X X O	O O X	O X O	O X O	O X O	O X O	X O O	X O O				
			Symbol 49 (Cam B)	Symbol 53 (Cam C)	Symbol 57 (Cam D)	Symbol 61 (Cam E)	Symbol 79 (Cam F)	Symbol 86 (Cam G)						
Type of Operator		Type Number										Price*		
Operator Only	Manual Return — Without Knob. Standard Knob Coin Operated Gloved Hand Knob Key Operated (Code 4 thru 10)	KS-42 KS-42▲ KS-42T▲ KS-42F▲ KS-42K★	KS-43 KS-43▲ KS-43T▲ KS-43F▲ KS-43K★	KS-44 KS-44▲ KS-44T▲ KS-44F▲ KS-44K★	KS-45 KS-45▲ KS-45T▲ KS-45F▲ KS-45K★	KS-46 KS-46▲ KS-46T▲ KS-46F▲ KS-46K★	KS-47 KS-47▲ KS-47T▲ KS-47F▲ KS-47K★	\$ 3.00 3.70 5.70 3.70 9.70						
	Spring Return — Left to Center — Without Knob Standard Knob Gloved Hand Knob Key Operated (Code 5, 6, or 9)	KS-62 KS-62▲ KS-62F▲ KS-62K★	KS-63 KS-63▲ KS-63F▲ KS-63K★	KS-64 KS-64▲ KS-64F▲ KS-64K★	KS-65 KS-65▲ KS-65F▲ KS-65K★	KS-66 KS-66▲ KS-66F▲ KS-66K★	KS-67 KS-67▲ KS-67F▲ KS-67K★	5.00 5.70 5.70 11.70						
	Spring Return — Right to Center — Without Knob Standard Knob Gloved Hand Knob Key Operated (Code 4, 5, or 7)	KS-72 KS-72▲ KS-72F▲ KS-72K★	KS-73 KS-73▲ KS-73F▲ KS-73K★	KS-74 KS-74▲ KS-74F▲ KS-74K★	KS-75 KS-75▲ KS-75F▲ KS-75K★	KS-76 KS-76▲ KS-76F▲ KS-76K★	KS-77 KS-77▲ KS-77F▲ KS-77K★	5.00 5.70 5.70 11.70						
	Spring Return — Both Sides to Center — Without Knob Standard Knob Gloved Hand Knob Key Operated (Code 5 only)	KS-52 KS-52▲ KS-52F▲ KS-52K5	KS-53 KS-53▲ KS-53F▲ KS-53K5	KS-54 KS-54▲ KS-54F▲ KS-54K5	KS-55 KS-55▲ KS-55F▲ KS-55K5	KS-56 KS-56▲ KS-56F▲ KS-56K5	KS-57 KS-57▲ KS-57F▲ KS-57K5	5.00 5.70 5.70 11.70						

TABLE 6 — KNOB COLOR CODE LETTER

Code letters below apply for the 2, 3, and 4 position NON-ILLUMINATED selector switches only. See Page 167 for illuminated selector switch code letters.

Color	Code Letter	Color	Code Letter
Black	B	Yellow	Y
Red	R	Orange	S
Green	G	Blue	L
Brown	N	White	W

TABLE 7 — KEY WITHDRAWAL CODE

2-Position Switches			3-Position Switches				4-Position Switches			
No.	Left	Right	No.	Left	Center	Right	No.	Left	Center	Right
1	Yes	No	4	Yes	No	No	8	Yes	No	Yes
2	No	Yes	5	No	Yes	No	9	No	Yes	Yes
3	Yes	Yes	6	No	No	Yes	10	Yes	Yes	Yes
			7	Yes	Yes	No				


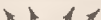
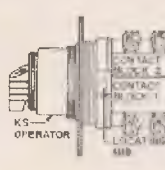
*Prices do not include legend plate. Order separate legend plate from Page 173.



TYPE K—OIL-TIGHT CONTROL UNITS

CLASS
9001

TABLE 8 — SELECTOR SWITCHES — FOUR POSITION NON-ILLUMINATED

 Standard Knob		Symbol	Description	Location	Type of Operator	Type	Price*
	X O O O	112 (Cam H)	Two (2) KA-1 Blocks. Mount in Pos. 1 & 2		Manual Return —		
	O O X O				Without Knob.	KS-88	\$3.00
	O O O X				Standard Knob.	KS-88▲	3.70
	O O O X				Coin Operated.	KS-88T▲	5.70
O X O O	Gloved Hand Knob.	KS-88F▲	3.70				
					Key Operated	KS-88K★	9.70

Ⓒ Operator only. Does not include contact blocks. Blocks are shown in table to left in conjunction with selector switch symbols for clarity only. Order blocks from Table 15, Page 169.

▲ Select knob color code letter from Page 166, Table 6.

★ Select key withdrawal code number from Page 166, Table 7.

TABLE 9 — SELECTOR SWITCH CAMS

Two, three, and four position non-illuminated and illuminated selector switches listed in Tables 4, 5, 6, 11, 12, and 13, use the Type K13 cams listed below. Key operated selector switches use Type T3 cams.

Cam	Type		Price	Std. Pack Qty. †
	Standard, Coin, Gloved Hand Knob	Key Operated		
A	K-13A	T-3A	\$.45 (DS-14 Discount)	10
B	K-13B	T-3B		10
C	K-13C	T-3C		10
D	K-13D	T-3D		10
E	K-13E	T-3E		10
F	K-13F	T-3F		10
G	K-13G	T-3G		10
H	K-13H	T-3H		10


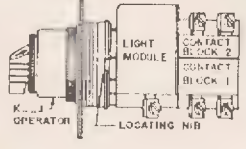
† Orders must specify quantity listed or multiple of quantity listed.

TABLE 10 — VOLTAGE AND KNOB COLOR CODE DESIGNATIONS

Voltage (●) and Knob Color (▲) required to complete Type numbers listed in Tables 11, 12, 13. EXAMPLE: A 2-position maintained contact selector switch, Symbol 44 with 120 V. module, red knob is Type K11J1R

Type	Description	Color of Knob											
		Amber		Blue		Clear		Green		Red		White	
		●	▲	●	▲	●	▲	●	▲	●	▲	●	▲
Transformer Type	120 V, 60 Hz.; 110 V, 50 Hz.	1	A	1	L	1	C	1	G	1	R	1	W
Incandescent Lamp	110 V, 25-30 Hz.	2	A	2	L	2	C	2	G	2	R	2	W
	208-220 V, 50-60 Hz.	3	A	3	L	3	C	3	G	3	R	3	W
	220 V, 25-30 Hz.	4	A	4	L	4	C	4	G	4	R	4	W
	240 V, 60 Hz.; 220 V, 50 Hz.	7	A	7	L	7	C	7	G	7	R	7	W
	480 V, 60 Hz.; 440 V, 50 Hz.	5	A	5	L	5	C	5	G	5	R	5	W
	600 V, 60 Hz.; 550 V, 50 Hz.	6	A	6	L	6	C	6	G	6	R	6	W
Full Voltage Type	6 V, AC or DC	31	A	31	L	31	C	31	G	31	R	31	W
	12 V, AC or DC	32	A	32	L	32	C	32	G	32	R	32	W
	18 V, AC or DC	33	A	33	L	33	C	33	G	33	R	33	W
	24 V, AC or DC	34	A	34	L	34	C	34	G	34	R	34	W
	28 V, AC or DC	35	A	35	L	35	C	35	G	35	R	35	W
	48 V, AC or DC	36	A	36	L	36	C	36	G	36	R	36	W
	60 V, AC or DC	37	A	37	L	37	C	37	G	37	R	37	W
	120 V, AC or DC	38	A	38	L	38	C	38	G	38	R	38	W

TABLE 11 — SELECTOR SWITCHES — TWO POSITION, ILLUMINATED

	Symbol	Description	Location	Type of Operator	Symbol Applicable	Cam Req'd.	ILLUMINATED		
							Type	Trans- former	Full Voltage
X O	44	One (1) KA-1 Block. Mount in Pos. 2		Manual Return					
O X				Standard Knob.	44, 45	A	K-11J●▲	\$11.70	\$ 9.70
X O				Coin Operated.	44, 45	A	K-11J●T▲	13.70	11.70
O X				Gloved Hand Knob.	44, 45	A	K-11J●F▲	11.70	9.70
X O	45	Two (2) KA-1 Blocks. Mount in Pos. 1 & 2		Spring Return from Left					
O X				Standard Knob.	44, 45	E	K-25J●▲	13.70	11.70
X O				Gloved Hand Knob.	44, 45	E	K-25J●F▲	13.70	11.70
O X									
O X	99	One (1) KA-1 Block. Mount in Pos. 2		Spring Return from Right					
X O				Standard Knob.	99, 100	D	K-34J●▲	13.70	11.70
O X				Gloved Hand Knob.	99, 100	D	K-34J●F▲	13.70	11.70
X O									

Ⓒ Operator only. Does not include contact blocks. Blocks are shown in Table to left in conjunction with selector switch symbols for clarity only. Order blocks from Page 169, Table 15.

● Complete Type Numbers by inserting Voltage (●) and Knob Color Code Letter (▲) from Table 10 above.

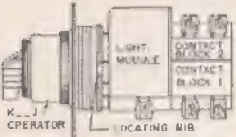



*Prices do not include legend plate. Order separate legend plate from Page 173.



OIL-TIGHT CONTROL UNITS—TYPE K

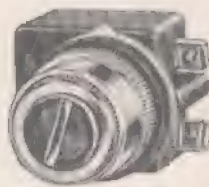
9001

TABLE 12 — SELECTOR SWITCHES — THREE-POSITION ILLUMINATED

Description		Contact Block Number	NOTE: Type Numbers listed below do not include contact blocks. Contact blocks are shown in conjunction with selector switch symbols for clarity. Order bloc s s from Page 169, Table 15.											
			Center	Center	Center	Center	Center	Center	Center	Center	Center	Center	Price	
			Left Right	Left Right	Left Right	Left Right	Left Right	Left Right	Left Right	Left Right	Left Right	Left Right		
Contact Block Only	Order One Type KA-1 Contact Block  #2	#2	X O O O X X Symbol 48 (Cam B)	X O O O O X Symbol 52 (Cam C)	O O X O X O Symbol 56 (Cam D)	X O O O X O Symbol 60 (Cam E)						\$3.00		
	Order Two Type KA-1 Contact Blocks (Mount Side-By-Side)  #1  #2	#2	X O O O X X O O X X X O Symbol 49 (Cam B)	X O O O O X X O O O O X Symbol 53 (Cam C)	O O X O X O O O X O X O Symbol 57 (Cam D)	X O O O X O X O O O X O Symbol 61 (Cam E)	X O O O O X O O X O O X Symbol 79 (Cam F)	X O O O X X O O X X O O Symbol 86 (Cam G)				6.00		
Operator Only	Type of Operator		Type Number									Price*		
	Manual Return — Without Knob. Standard Knob Coin Operated. Gloved Hand Knob.		K-42J● K-42J●▲ K-42J●T▲ K-42J●F▲	K-43J● K-43J●▲ K-43J●T▲ K-43J●F▲	K-44J● K-44J●▲ K-44J●T▲ K-44J●F▲	K-45J● K-45J●▲ K-45J●T▲ K-45J●F▲	K-46J● K-46J●▲ K-46J●T▲ K-46J●F▲	K-47J● K-47J●▲ K-47J●T▲ K-47J●F▲	\$11.00 11.70 13.70 11.70	\$ 9.00 9.70 11.70 9.70				
		Spring Return — Left to Center — Without Knob Standard Knob Gloved Hand Knob.		K-62J● K-62J●▲ K-62J●F▲	K-63J● K-63J●▲ K-63J●F▲	K-64J● K-64J●▲ K-64J●F▲	K-65J● K-65J●▲ K-65J●F▲	K-66J● K-66J●▲ K-66J●F▲	K-67J● K-67J●▲ K-67J●F▲	13.00 13.70 13.70	11.00 11.70 11.70			
			Spring Return — Right to Center — Without Knob Standard Knob Gloved Hand Knob		K-72J● K-72J●▲ K-72J●F▲	K-73J● K-73J●▲ K-73J●F▲	K-74J● K-74J●▲ K-74J●F▲	K-75J● K-75J●▲ K-75J●F▲	K-76J● K-76J●▲ K-76J●F▲	K-77J● K-77J●▲ K-77J●F▲	13.00 13.70 13.70	11.00 11.70 11.70		
				Spring Return — Both Sides to Center — Without Knob. Standard Knob Gloved Hand Knob		K-52J● K-52J●▲ K-52J●F▲	K-53J● K-53J●▲ K-53J●F▲	K-54J● K-54J●▲ K-54J●F▲	K-55J● K-55J●▲ K-55J●F▲	K-56J● K-56J●▲ K-56J●F▲	K-57J● K-57J●▲ K-57J●F▲	11.00 11.70 13.70	11.00 11.70 11.70	



Standard Knob


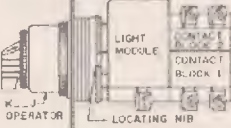


Coin Operated



Gloved Hand Knob

TABLE 13 — SELECTOR SWITCHES — FOUR POSITION ILLUMINATED

	Symbol	Description	Location	Type of Operator	Type	Price*	
						Transformer Type	Full Voltage
X O O O	112 (Cam H)	Two (2) KA-1 Blocks Mount in Position 1 & 2	 Illuminated	Manual Return — Without Knob. Standard Knob. Coin Operated. Gloved Hand Knob.	K-88J● K-88J●T▲ K-88J●F▲	\$11.00	\$ 9.00
O O X O						11.70	9.70
O O O X						13.70	11.70
O X O O						11.70	9.70




● Operator only. Does not include contact blocks. Blocks are shown in Table to left in conjunction with selector switch symbols for clarity only. Order blocks from Page 169, Table 15.
 ▲ Complete Type Numbers by inserting Voltage (●) and Knob Color Code Letter (▲) from Page 167, Table 10.
 *Prices do not include legend plate. Order separate legend plate from Page 173.



TYPE K—OIL-TIGHT CONTROL UNITS

CLASS
9001

TABLE 14 — SELECTOR-PUSH BUTTON

Contact Block Only	Description		Contact Block No.	 NOTE: Type Numaaers listed below do not include contact blocks. Contact blocks are shown in conjunction with symbols for clarity. Order blocks from Table 15 below. F = Free D = Depressed																Price	
	TWO POSITION																THREE POSITION				
	Left	Right		Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Center	Right			
	F D	F D		F D	F D	F D	F D	F D	F D	F D	F D	F D	F D	F D	F D	F D	F D	F D	F D		
	Order One Type KA-1 Contact Block		#2	0 0	X 0	0 0	X 0	0 0	X X	X X	X 0	X X	0 0	X 0	0 0	X 0	0 0	X 0	X 0	X X	\$3.00
	 #2			Symbol 117		Symbol 93		Symbol 116		Symbol 102		Symbol 71		Symbol 75		Symbol 67		Symbol 118			
	Order Two Type KA-1 Contact Blocks (Mount Side-By-Side)		#2	0 0	X 0	0 0	X 0	0 0	X X	X 0	X X	X 0	0 0	X 0	0 0	X 0	0 0	X 0	X 0	X X	6.00
	 #1 #2			Symbol 95		Symbol 94		Symbol 98		Symbol 82		Symbol 72		Symbol 72		Symbol 68		Symbol 85			
Color of Insert		#1 #2	Type Number																Price*		
Black			KQ-11B	KQ-12B	KQ-13B	KQ-14B	KQ-15B	KQ-16B	KQ-18B	KQ-27B											
Red			KQ-11R	KQ-12R	KQ-13R	KQ-14R	KQ-15R	KQ-16R	KQ-18R	KQ-27R											
Green			KQ-11G	KQ-12G	KQ-13G	KQ-14G	KQ-15G	KQ-16G	KQ-18G	KQ-27G											
Brown			KQ-11N	KQ-12N	KQ-13N	KQ-14N	KQ-15N	KQ-16N	KQ-18N	KQ-27N											
Yellow			KQ-11Y	KQ-12Y	KQ-13Y	KQ-14Y	KQ-15Y	KQ-16Y	KQ-18Y	KQ-27Y											
Orange			KQ-11S	KQ-12S	KQ-13S	KQ-14S	KQ-15S	KQ-16S	KQ-18S	KQ-27S											
Blue			KQ-11L	KQ-12L	KQ-13L	KQ-14L	KQ-15L	KQ-16L	KQ-18L	KQ-27L											

⊙ Mount block in position #1.

*Prices do not include legend plate. Order separate legend plate from Page 173.

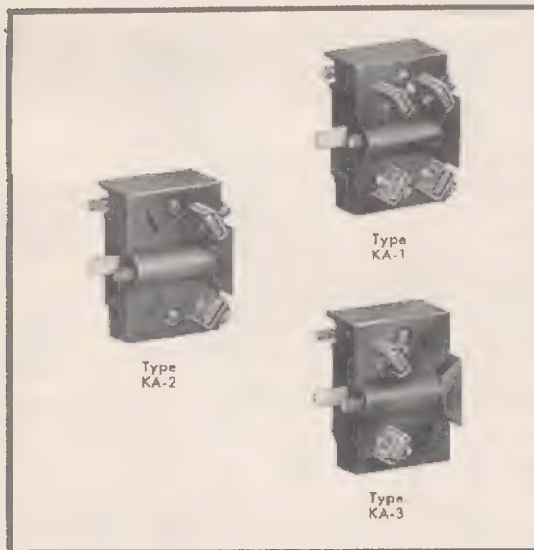












TABLE 15 — CONTACT BLOCKS

600 VOLTS AC OR DC MAX.

Symbol	Type	Price	Symbol	Type	Price
	KA-1	\$ 3.00		KA-4	\$ 3.00
	KA-2	1.50		KA-5	1.50
	KA-3	1.50		Order One Type KA-4 and One Type KA-1 Sequencing† Contacts	6.00
	Order Two Type KA-1	6.00		Order One Type KA-4 and One Type KA-5 Overlapping‡ Contacts	4.50
	Order Two Type KA-2	3.00			
	Order Two Type KA-3	3.00			

† Sequencing — N.O. contact of KA-4 closes before N.O. contact on KA-1 (Type KR operator only).
‡ Overlapping — N.O. contact of KA-4 closes before N.C. contact of KA-5 opens (Type KR operator only).

CONTACT BLOCK RATING — TYPE KA

AC							DC					
Volts	Inductive Pilot Duty — 35% Power Factor					Resistive 75% Power Factor	Volts	Inductive Pilot Duty and Resistive				
	Make		Break		Continuous Carrying Amperes			Make and Break				Con- tinuous Carrying Amperes
	Amperes	VA	Amperes	VA		KA-2 KA-3		KA-1 (Double Throw)	KA-5	KA-4		
120	60	7200	5	720	10	10	120	2.2	2.2	1.1	1.1	10
240	30	7200	3	720	10	10	240	1.1	0.55	0.55	—	10
480	15	7200	1.5	720	10	10	600	0.4	0.2	0.2	—	10
600	12	7200	1.2	720	10	10						

▲ Ratings also apply to Type T blocks on Page 176.



SCHEDULE DS-1 DISCOUNT

PAGE 169

OIL-TIGHT CONTROL UNITS—TYPE K

CLASS
9001

TABLE 16 — PILOT LIGHTS — STANDARD AND PUSH-TO-TEST

• COLOR CAP CODE LETTER (USE TO COMPLETE TYPE NOS. BELOW)

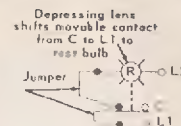
Color	CODE LETTER		Lamp No.	Ratec VA	Type Without Color Cap	Price	Type With Color Cap	Price	Type Without Color Cap	Price	Type With Color Cap	Price
	Glass	Plastic										
Red	R6	R9	GE 44	3.60	KP-1		KP-1*		KT-1		KT-1*	
Green	G6	G9	GE 1490	4.00	KP-2		KP-2*		KT-2		KT-2*	
Amber	A6	A9	GE 44	3.60	KP-3	\$10.00	KP-3*	\$10.70	KT-3	\$13.00	KT-3*	\$13.70
Blue	L6	L9	GE 44	3.60	KP-4		KP-4*		KT-4		KT-4*	
Clear	C6	C9	GE 1490	5.00	KP-5		KP-5*		KT-5		KT-5*	
White	W6	W9	GE 44	3.60	KP-6		KP-6*		KT-6		KT-6*	
Yellow	Y6	Y9	GE 44	3.60								
Transformer Type	120 V., 60 Hz., 110 V., 50 Hz.	3.60 60 Hz., 6.00 50 Hz.	GE 44	3.60	KP-31		KP-31*		KT-31		KT-31*	
	110 V., 25-30 Hz.	4.00 25 Hz.	GE 1490	4.00	KP-32		KP-32*		KT-32		KT-32*	
Full Voltage Type	208-220 V., 50-60 Hz.	3.60 60 Hz., 6.00 50 Hz.	GE 44	3.60	KP-33	8.00	KP-33*	8.70	KT-33	11.00	KT-33*	11.70
	220 V., 25-30 Hz.	5.00 25 Hz.	GE 1490	5.00								
	240 V., 60 Hz., 220 V., 50 Hz.	3.60 60 Hz., 6.00 50 Hz.	GE 44	3.60	KP-34		KP-34*		KT-34		KT-34*	
	480 V., 60 Hz., 440 V., 50 Hz.	3.60 60 Hz., 6.00 50 Hz.	GE 44	3.60	KP-35		KP-35*		KT-35		KT-35*	
	500 V., 60 Hz., 550 V., 50 Hz.	3.60 60 Hz., 6.00 50 Hz.	GE 44	3.60	KP-36		KP-36*		KT-36		KT-36*	
					KP-37		KP-37*		KT-37		KT-37*	
	6 V., AC or DC	.840	Sylvania	.840	KP-38		KP-38*		KT-38		KT-38*	
	12 V., AC or DC	2.04	GE 18E	2.04								
	18 V., AC or DC	.810	Sylvania	.810								
	24 V., AC or DC	1.75	Sylvania	1.75								
	28 V., AC or DC	1.12	28 PSB	1.12								
	48 V., AC or DC	2.54	48 PSB	2.54								
	60 V., AC or DC	3.00	60 PSB	3.00								
	120 V., AC or DC	3.00	120 PSB	3.00								



Standard Pilot Light



Push-To-Test Pilot Light



• Complete Type Number by inserting appropriate color cap code letter listed in table above.

*Prices do not include legend plate. Order separate legend plate from Page 173.

TABLE 17 — DUAL FUNCTION OPERATOR

Operator will perform the same function as two separate push buttons and mount in a single cover hole. A dual function split field nameplate, Type KN-5, can be ordered from page 173



COLOR		Momentary Contact* Price \$5.70	Maintained Contact* Price \$8.70
Left Insert:	Right Insert		
Black	Black	KR-6BB	KR-7BB
Black	Red	KR-6BR	KR-7BR
Red	Black	KR-6RB	KR-7RB
Green	Red	KR-6GR	KR-7GR
Red	Green	KR-6RG	KR-7RG
Universal	(All Colors)	KR-6U	KR-7U

*Prices DO NOT include legend plate. Order separate legend plate from page 173.

TABLE 18 — PUSH-PULL OPERATOR



Illuminated



Non-Illuminated

Knob Color	Illuminated (Transformer Type)		Price
	Momentary	Maintained	
Red	KR-8P+R	KR-9P+R	\$14.00
Green	KR-8P+G	KR-9P+G	
Blue	KR-8P+L	KR-9P+L	
Yellow	KR-8P+Y	KR-9P+Y	
Amber	KR-8P+A	KR-9P+A	
Clear	KR-8P+C	KR-9P+C	
White	KR-8P+W	KR-9P+W	

† Insert Voltage Numbers from Table Below.

Voltage	120 V., 60 Hz., 110 V., 50 Hz.	208-220 V., 50-60 Hz.	240 V., 60 Hz., 220 V., 50 Hz.	480 V., 60 Hz., 440 V., 50 Hz.	600 V., 60 Hz., 550 V., 50 Hz.
Voltage No.	1	2	7	5	6




For a Non-Illuminated Operator omit the letter P and voltage number: (Example: Type KR-8R) A Type KA-1 or KA-3 contact block can be used for block "A" and "C". Contact block "B" must be a Type KA-5. List price for Non-Illuminated Operator — Maintained \$9.00* — Momentary \$6.00*

★ Price includes "Pull-to-Start — Push-to-Stop" nameplate.

TABLE 19 — JOY STICK OPERATOR



With Latch

Description						Price*	Contact Block Only
			Type (Operator Only)				
3 Position- Center Off	Momentary Contact —	Without Latch	K31	K71		\$17.70	Order (2)
	Spring Return to Center	With Latch	K30	K70		17.70	Type KA-3
	Maintained	Without Latch	K33	K73		17.70	Contact
	Contact	With Latch	K32	K72		17.70	Blocks
5 Position- Center Off	Momentary Contact	Without Latch			K35	21.70	Order (2)
	Spring Return to Center	With Latch			K34	21.70	Type KA-1
	Maintained	Without Latch			K37	21.70	Contact
	Contact	With Latch			K36	21.70	Blocks

The joy stick operator is ideal for applications where only one circuit is to be energized at one time. The three position joy stick closes one circuit each in Up-Down or Right-Left position with all circuits open in center position. The five position operator closes one circuit each in Up, Down, Left and Right positions with all circuits open in center position.

Momentary contact operators spring return to the center position. Maintained operators remain in each position and must be reset manually. Operators with latch cannot be operated until the latch button in center of handle is pressed. Contact blocks may be mounted side by side and in tandem to a maximum of four blocks.

*Prices do not include legend plate. Order separate legend plate from Page 173.



TYPE K — OIL-TIGHT CONTROL UNITS

SPECIAL PURPOSE OPERATORS AND ACCESSORIES

CLASS
9001



POTENTIOMETER			
Watts	Description	Type	Price
2	Operator only- Single Unit	K-20	\$14.00
	Operator with Single Pot. .	K-21	20.00
	Operator only- Tandem Pot. .	K-22	22.00
	Operator with Tandem Pot.	K-23	28.00

▲ Complete Type No. by adding suffix No. from table below.

Suffix	Ohms	Suffix	Ohms	Suffix	Ohms	Ohms	
						Front	Rear
01	50	06	2500	11	100K	81	500 1000
02	100	07	5000	12	250K	82	1000 1000
03	250	08	10K	13	500K	83	5000 5000
04	500	09	25K	14	1.0 Meg	84	25K 25K
05	1000	10	50K	15	2.5 Meg		

EMERGENCY "BREAK GLASS" OPERATOR



Class 9001, Type K-15
Price \$8.70 *

Operator is held in a depressed position by a glass disc. When the glass disc is broken with the hammer, button returns to a normal extended position.

WOBBLE STICK



For easy operation of any standard push button

Type	Price
K-8	\$3.

MAINTAINED CONTACT PUSH BUTTONS



Description	Type	Price*
Maintained Contact, in ed, Two Button Assembly	KR11U	\$ 8.40
Two Button Interlocked Assembly, One Button Maintained, One Button Momentary	KR12U	11.40

The KR11 and KR12 push buttons are interlocked preventing the depressing of both buttons at the same time. The KR12 is designed for those applications requiring a momentary start and maintained stop, two push button arrangement. KR11 and KR12 include two packages of eight color inserts for color coding the push buttons. (Contact blocks not included.)

INTERLOCK



For mechanically interlocking two push buttons so that only one button can be depressed at a time. A Type K3 attachment is furnished with the 9001 KR-11 and KR-12 operators. However, maintained operators are supplied here and the K3 interlock serves to release one of the buttons when the other is depressed. When used with momentary contact buttons, the K3 interlock **does not** hold the buttons in the depressed position. It simply prevents pushing both buttons at the same time.

Type	Price
K-3	\$3.

CLOSING PLATES



For covering unused holes in enclosure cover.

Description	Type	Price
Standard Use on KY, KYA, KZ	K-11	\$1.
Chrome Plated For use on KYC	K-12	1.

ROUND CLOSING PLATES



For covering unused holes in enclosure cover

Description	Type	Price
Standard Use on KY, KYA, KZ	K-51	\$1.
Chrome Plated Use on KYC	K-52	1.

TIME DELAY PUSH BUTTON (Time Delay after Release of Button)

Timing period is adjustable from 0.2 second to 1 minute and begins after push button has been released. Devices require the space of two standard operators. Devices include a package of eight color inserts for color coding the push button. Contacts are quick make — quick break. Types listed are full guard versions. Insert 2 (Extended Guard) or 3 (No Guard) into Type Number for other versions. **Ex.: KR20U-H1.**



Description		
	Timed Contact 1 N.O. & 1 N.C.	Timed Contact 2 N.O. & 2 N.C.
Type	KRD1U-H1	KRD1U-H2
Price *	\$17.70	\$32.70

PLUG RECEPTACLE



Provides a panel or control station with a convenient power source to supply work lamps or portable power tools. Plug will accept a cord diameter from .291 inch to .421 inch. Complete unit is oil-tight and has a maximum rating of 15 amperes at 125 volts. Receptacle cover must be in place when not in use to retain oil-tight seal.

Description	Type	Price
Midget Twist-Lock Receptacle with provisions for grounding	K-24	\$6.
Midget Twist-Lock Plug with Seal-Tite Plug cover	K-14	4.

PROTECTIVE CAPS



KU-1



KU-17



KU-37



KU-27

The Type KU Protective Caps are suitable for either dust-tight or water-tight applications. For dust-tight applications standard KN nameplates can be used. For water-tight applications separately mounted legend plates must be used.

For Push Buttons			Clear Color for	Type	Price
Color	Type	Price	Selector Switch	KU-17	\$3.
Black	KU-1	\$2.	Standard Pilot Light	KU-27	3.
Red	KU-2	2.	Push-to-Test and		
Blue	KU-3	2.	Illuminated Push But.	KU-37	3.
			Without Guard		
Brown	KU-4	2.	Illuminated Push But.		
Green	KU-5	2.	With Guard	KU-47	4.
Yellow	KU-6	2.			

WRENCH



For tightening ring nut on operators.

Type	Price
K-1	\$3.

PADLOCK ATTACHMENTS



For Push Button Cover Type Attachment that can be padlocked. Does not hold button in depressed position.

Type K-6 | Price \$3.



For Selector switches. Cover type attachment that can be padlocked to keep unauthorized personnel from tampering with operator.

Type K-7 | Price \$3.



For Push Button Std. or Mushroom Button. (Holds button in depressed position. Padlock not included).

Type K-4 | Price \$3.



For Push Buttons with protective cap. Holds button in depressed position and can be padlocked.

Type K-5 | Price \$5.

*Prices do not include legend plate. Order separate legend plate from page 173.



SCHEDULE DS-1 DISCOUNT

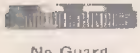


PAGE 171

OIL-TIGHT CONTROL UNITS—TYPE K


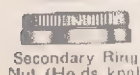
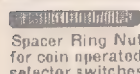
ACCESSORIES

9001

PUSH BUTTON GUARDS

Description	Type	Price
 No Guard	K-40	\$.30
 Full Guard	K-41	.30
 Extended Guard	K-42	.30

SELECTOR SWITCH GUARDS

 Selector Switch Guard	K-45	\$.30
 Secondary Ring Nut (Holds knob on selector switches)	K-46	.30
 Spacer Ring Nut for coin operated selector switches	K-43	.30

KNOBS FOR PUSH-PULL OPERATORS (Illuminated and Non-Illuminated)



Color	Type	Price
Red	R-22	\$.70
Green	G-22	
Blue	L-22	
Yellow	Y-22	
White	W-22	
Black	B-23▲	
Brown	N-23▲	
Orange	S-23▲	
Clear	C-22	
Amber	A-22	

▲Black, brown, and orange are opaque and for use on non-illuminated operators only.

LIGHT MODULES



Description	Voltage and Frequency	Type		Price
		Standard	Flashing Type*	
Transformer	120 V., 60 Hz.	KM-1	KMF-1	\$8.
	110 V., 50 Hz.			
	110 V., 25-30 Hz.	KM-2		
	208-220 V., 60-60 Hz.	KM-3		
	220 V., 25-30 Hz.	KM-4		
	480 V., 60 Hz.	KM-5		
	440 V., 50 Hz.			
	600 V., 60 Hz.	KM-6		
Neon	550 V., 50 Hz.			6.
	240 V., 60 Hz.	KM-7	KMF-7	
	220 V., 50 Hz.			
Resistor	277 V., 60 Hz.	KM-8		6.
	120 V., AC or DC	KM-11		
	240 V., AC or DC	KM-12		
	380 V., AC or DC	KM-13		
	480 V., AC or DC	KM-14		
Full Voltage	550 V., AC or DC	KM-15		6.
	14 V., AC or DC	KM-21		
	18 V., AC or DC	KM-22		
	32 V., AC or DC	KM-23		
	240 V., AC or DC	KM-25		
Full Voltage	6 V., AC or DC	KM-31		6.
	12 V., AC or DC	KM-32		
	18 V., AC or DC	KM-33		
	24 V., AC or DC	KM-34		
	28 V., AC or DC	KM-35		
	48 V., AC or DC	KM-36		
	60 V., AC or DC	KM-37		
	120 V., AC or DC	KM-38		

*The KMF-1 and KMF-7 use G.E. Flashing Lamp #256.

MUSHROOM BUTTON KIT (Non-Illuminated Operators)



For conversion of standard push button to Mushroom button operator

Color	Type No.		Price
	1 3/8" D.	2 1/4" D.	
Black	K-16B	K-17B	\$ 3.
Red	K-16R	K-17R	
Green	K-16G	K-17G	
Brown	K-16N	K-17N	
Yellow	K-16Y	K-17Y	
Orange	K-16S	K-17S	
Blue	K-16L	K-17L	

SELECTOR SWITCH KNOBS (Illuminated and Non-Illuminated Operators)



Standard Knob

Large (Std.) Gloved Hand Knob

Small Gloved Hand Knob

Coin Operated

Color	Standard Knob		Gloved Hand Knob		Large Gloved Hand Knob		Coin Operated	
	Type	Price	Type	Price	Type	Price	Type	Price
Black	B-11▲	\$0.70	B-17▲	\$0.70	B-25▲	\$0.70	B-18▲	\$0.70
Red	R-8	.70	R-15	.70	R-24	.70	R-16	.70
Green	G-8	.70	G-15	.70	G-24	.70	G-16	.70
Brown	N-11▲	.70	N-17▲	.70	N-25▲	.70	N-18▲	.70
Yellow	Y-8	.70	Y-15	.70	Y-24	.70	Y-16	.70
Orange	S-11▲	.70	S-17▲	.70	S-25▲	.70	S-18▲	.70
Blue	L-8	.70	L-15	.70	L-24	.70	L-16	.70
White	W-8	.70	W-15	.70	W-24	.70	W-16	.70
Amber	A-8	.70	A-15	.70	A-24	.70	A-16	.70
Clear	C-8	.70	C-15	.70	C-24	.70	C-16	.70

▲Black, brown, and orange are opaque and for use on non-illuminated operators only.

SEPARATE COLOR CAPS

For Illuminated Operators



R6

R9

R7

R20

R21

For Standard and Push-to-Test Pilot Light

Color	Type		Price
	Glass	Plastic	
Red	R-6	R-5	\$.70
Green	G-6	G-5	
Amber	A-6	A-5	
Blue	L-6	L-5	
Clear	C-6	C-5	
White	W-6	W-5	
Yellow	Y-6	Y-5	

Plastic for Illuminated Push Button

Color	Type	Price	1 3/8" Mushroom		2 1/4" Mushroom	
			Type	Price	Type	Price
Red	R-7	\$.70	R-20	\$.70	R-21	\$.70
Green	G-7		G-20		G-21	
Amber	A-7		A-20		A-21	
Blue	L-7		L-20		L-21	
Clear	C-7		C-20		C-21	
White	W-7		W-20		W-21	
Yellow	Y-7		Y-20		Y-21	



TYPE K—OIL-TIGHT CONTROL UNITS

CLASS
9001

STANDARD LEGEND PLATES — KN-2, KN-3 AND KN-8

Standard Marking (Back Field Unless Noted) *Red Field	Type Number		
	KN-200	KN-300	KN-800

FOR PUSH BUTTON OR PILOT LIGHT

Standard Marking	KN-200R	KN-300R	KN-800R
*Blank	KN-200	KN-300	KN-800
Blank	KN-201	KN-301	KN-801
Start	KN-202	KN-302	KN-802
*Stop	KN-203	KN-303	KN-803
On	KN-204	KN-304	KN-804
*Off	KN-205	KN-305	KN-805
*Emerg. Stop	KN-206	KN-306	KN-806
Forward	KN-207	KN-307	KN-807
Reverse	KN-208	KN-308	KN-808
Close	KN-209	KN-309	KN-809
Open	KN-210	KN-310	KN-810
Down	KN-211	KN-311	KN-811
Up	KN-212	KN-312	KN-812
Fast	KN-213	KN-313	KN-813
Slow	KN-214	KN-314	KN-814
High	KN-215	KN-315	KN-815
Low	KN-216	KN-316	KN-816
Inch	KN-217	KN-317	KN-817
In	KN-218	KN-318	KN-818
Jog	KN-219	KN-319	KN-819
Jog For	KN-220	KN-320	KN-820
Jog Rev.	KN-221	KN-321	KN-821
Lower	KN-222	KN-322	KN-822
Out	KN-223	KN-323	KN-823
Reset	KN-224	KN-324	KN-824
Run	KN-225	KN-325	KN-825
Start Jog	KN-226	KN-326	KN-826
Test	KN-227	KN-327	KN-827
Raise	KN-228	KN-328	KN-828
Decrease	KN-229	KN-329	KN-829
Increase	KN-230	KN-330	KN-830
Left	KN-231	KN-331	KN-831
Right	KN-232	KN-332	KN-832
Cycle Start	KN-233	KN-333	KN-833
Feed Start	KN-234	KN-334	KN-834
Cycle Stop	KN-235	KN-335	KN-835
Feed Stop	KN-236	KN-336	KN-836
Motor Run	KN-237	KN-337	KN-837
Motor Stop	KN-238	KN-338	KN-838
Power On	KN-239	KN-339	KN-839
Full Speed	KN-240	KN-340	KN-840
Low Speed	KN-241	KN-341	KN-841
Second Speed	KN-242	KN-342	KN-842
Third Speed	KN-243	KN-343	KN-843

FOR SELECTOR SWITCH OR SELECTOR PUSH BUTTON

For.-Rev.	KN-239	KN-339	KN-839
Hand-Auto.	KN-240	KN-340	KN-840
High-Low	KN-241	KN-341	KN-841
Jog-Run	KN-242	KN-342	KN-842
Man.-Auto.	KN-243	KN-343	KN-843
Off-On	KN-244	KN-344	KN-844
On-Off	KN-245	KN-345	KN-845
Open-Close	KN-246	KN-346	KN-846
Raise-Lower	KN-247	KN-347	KN-847
Run-Jog	KN-248	KN-348	KN-848
Safe-Run	KN-249	KN-349	KN-849
Slow-Fast	KN-250	KN-350	KN-850
Stop-Start	KN-251	KN-351	KN-851
Up-Down	KN-252	KN-352	KN-852
Low-High	KN-253	KN-353	KN-853
Start-Stop	KN-254	KN-354	KN-854
Left-Right	KN-255	KN-355	KN-855
On-Auto	KN-256	KN-356	KN-856
Summer-Winter	KN-257	KN-357	KN-857
Auto-Off-Hand	KN-258	KN-358	KN-858
For.-Off-Rev.	KN-259	KN-359	KN-859
Hand-Off-Auto	KN-260	KN-360	KN-860
Jog-Safe-Run	KN-261	KN-361	KN-861
Man.-Off-Auto	KN-262	KN-362	KN-862
Open-Off-Close	KN-263	KN-363	KN-863
Up-Off-Down	KN-264	KN-364	KN-864
Low-Off-High	KN-265	KN-365	KN-865
For.-Safe-Rev.	KN-266	KN-366	KN-866
Jog-Slow-Run	KN-267	KN-367	KN-867
Slow-Off-Fast	KN-268	KN-368	KN-868
Summer-Off-Winter	KN-269	KN-369	KN-869
High-Low-Off	KN-270	KN-370	KN-870
Raise-Off-Lower	KN-271	KN-371	KN-871
High-Off-Low	KN-272	KN-372	KN-872
Auto-Man.-Off	KN-273	KN-373	KN-873

SPECIAL LEGEND PLATES — KN-4, KN-5, KN-6 and KN-9

LEGEND PLATES

Type No.	Standard Markings		Type No.	Standard Markings	
	Green	Red		Black	Black
KN-500	Blank	Blank	KN-520	Blank	Blank
KN-501	Start	Stop	KN-521	Start	Stop
KN-502	On	Off	KN-522	On	Off
			KN-523	Forward	Reverse
			KN-524	Up	Down
			KN-525	High	Low
			KN-526	Open	Close

Description	Description	Description
	Extra Large KN-600†	
		Double Headed KN-400†
		For Use With Joy Stick Operators KN-900

†Can be used with all Type KY enclosures but must be mounted horizontally when used with KY-2 3, or 4.

†For customers enclosure only. Minimum spacing between operators must be 2 3/4" vertically and 2 1/4" horizontally.

PRICING INFORMATION

Legend Plate	Description	Type No.	Price
KN-2	Standard Markings	Select from KN-2 Standard Legend Plate Listing	.30
	Special Marking (Specify Marking Required)	Black Field	1.30
		Red Field	1.30
KN-3	Standard Markings	Select from KN-3 Standard Legend Plate Listing	.30
	Special Marking (Specify Marking Required)	Black Field	1.30
		Red Field	1.30
KN-4	Blank	KN-400	.60
	Any Marking (Specify Marking)	KN-499	1.60
KN-5	Standard Markings	Select from KN-5 Standard Legend Plate Listing	.30
	Special Marking (Specify Marking Required)	Black Field	1.30
		Green-Red Field	1.30
KN-6	Blank	KN-600	.60
	Any Marking (Specify Marking)	KN-699	1.60
KN-8 (For Use with KYC Enclosure)	Blank	Blue Field	.30
		Red Field	.30
	Standard Markings	Select from KN-8 Standard Legend Plate Listing	.30
KN-9	Special Marking (Specify Marking Required)	Blue Field	1.30
		Red Field	1.30
	Blank	KN-900	.30
	Any Marking (Specify)	KN-999	1.30

Maximum Number of Lines and Characters for Type KN Legend Plates

Type	KN-2	KN-3	KN-4	KN-5	KN-6	KN-8	KN-9
Max. No. of Characters per Line	18	18	18	8 per field	22	8	18 per Pos.
Max. No. of Lines	2	3	4	2 per field	4	2	1 per Pos.

The maximum number of characters and lines given above is a practical maximum and is based on a minimum size of characters to facilitate easy reading. When fewer characters than the maximum are required the size of the characters is changed to permit the best readability.



OIL-TIGHT CONTROL STATIONS—TYPE K

CLASS
9001

NEMA 13 heavy duty oil-tight control stations are available for surface or flush mounting. Completely assembled stations can be supplied, or enclosures and various control units can be purchased for assembly as control stations.

STANDARD FACTORY ASSEMBLED STATIONS — NEMA 13

No. of Units	Nameplate Markings	Features	Surface Mounting Type		Flush Mounting Type	
			Type	Price	Type	Price
1	Start.	Mushroom Button	KYK-11	\$ 16.	KZK-11	\$ 12.
	Start.		KYK-12	19.	KZK-12	15.
	Stop.		KYK-13	16.	KZK-13	12.
	Stop.	Mushroom Button. Selector Switch.	KYK-14	19.	KZK-14	15.
	Off-On...		KYK-110	17.	KZK-110	13.
	Auto-Off-Hand.		KYK-111	17.	KZK-111	13.
2	Start-Stop	Mushroom on Stop	KYK-21	23.	KZK-21	18.
	Start-Stop.		KYK-22	26.	KZK-22	21.
	Start-Stop.		KYK-23	26.	KZK-23	21.
	Up-Down	Maintained Contact.	KYK-25	23.	KZK-25	18.
	Start-Stop		KYK-27	23.	KZK-27	18.
3	Forward-Reverse-Stop		KYK-31	31.	KZK-31	25.
	Up-Down-Stop...		KYK-32	31.	KZK-32	25.
	Open-Close-Stop		KYK-33	31.	KZK-33	25.
	High-Low-Stop...		KYK-34	31.	KZK-34	25.

For station identification plate on enclosure with markings as specified, add \$ 1.50.

CUSTOM BUILT FACTORY ASSEMBLED STATIONS — NEMA 13

No. of Units	Surface Mounting				Flush Mounting	
	Cast		Sheet Steel		Cast	
	Type	Base Price	Type	Base Price	Type	Base Price
1	KY-10	\$ 10.			KZ-110	\$ 6.
2	KY-20	11.			KZ-210	6.
3	KY-30	13.			KZ-310	7.
4	KY-40	16.			KZ-410	10.
6	KY-60	20.	KYA-60	\$ 13.	KZ-60	14.
9	KY-90	26.	KYA-90	16.	KZ-90	19.
12	KY-120	35.	KYA-120	20.	KZ-120	27.
16	KY-160	45.	KYA-160	25.	KZ-160	37.
20			KYA-200	30.		
25			KYA-250	35.		

For legend plate on enclosure with markings as specified add \$1.50.

ORDERING INFORMATION REQUIRED: Specify class and type number shown above. Submit sketch showing all control units in their desired location. (Forms for this purpose are available from Square D field offices.) Select control units from pages 165-173 or from Pages 176-177.

Type KYK-31 Control Station

Type KZK-31 Control Station

Type KY-120 Control Station

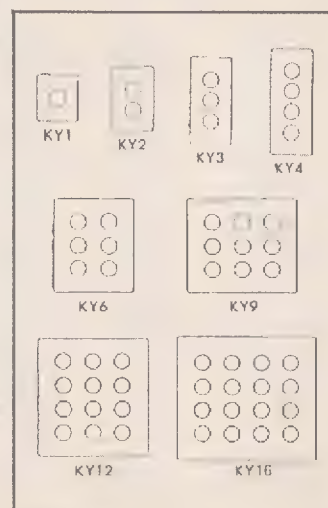
ENCLOSURES — NEMA 13 (For Customer Assembly)

CAST ENCLOSURES

No. of Units	Enclosure only Includes Box, Gasket, and Cover		Cover Plate with Gasket Only	
	Type	Price	Type	Price
1	KY-1	\$ 10.	KZ-11	\$ 6.
2	KY-2	11.	KZ-21	6.
3	KY-3	13.	KZ-31	7.
4	KY-4	16.	KZ-41	10.
6	KY-6	20.	KZ-6	14.
9	KY-9	26.	KZ-9	19.
12	KY-12	35.	KZ-12	27.
16	KY-16	45.	KZ-16	37.

SHEET STEEL ENCLOSURES

Number of Units	Enclosure Only	
	Type	Price
6	KYA-6	\$ 13.
9	KYA-9	16.
12	KYA-12	20.
16	KYA-16	25.
20	KYA-20	30.
25	KYA-25	35.



ORDERING INFORMATION REQUIRED: Class and type number.



TYPE K—HEAVY DUTY CONTROL STATIONS

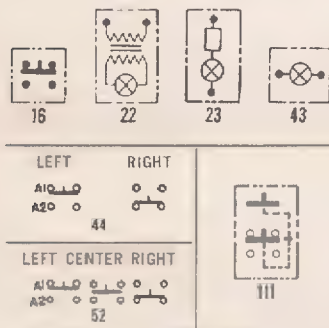
NEMA 4 STAINLESS STEEL ENCLOSURE

Stainless steel enclosures give these heavy duty control stations greatly improved protection from corrosive atmospheres and liquids. Push buttons, selector switches and pilot lights are provided with a water-tight cap which gives each unit a smooth, easy-to-clean surface. Metal legend plates with clear baked protective finish and chrome plated conduit hubs are other standard features.

CLASS
9001



CONTACT SYMBOLS



ASSEMBLED CONTROL STATIONS

600 VOLTS MAX. AC

No. of Units	Nameplate Markings	Features	Type	Price	Contact Symbol		
					Top	2	3
1	Start.....	Lockout.....	KYC-101	\$ 26.	16		
	Stop.....		KYC-103	26.	16		
	Reset.....		KYC-105	31.	16		
	Jog.....		KYC-106	26.	16		
	Man.-Auto.....		KYC-107	26.	16		
	For.-Rev.....	Selector Switch.....	KYC-108	28.	44		
	Off-On.....		KYC-109	28.	44		
	Hand-Off-Auto.....		KYC-110	28.	44		
	For.-Off-Rev.....		KYC-111	28.	52		
			KYC-112	28.	52		
	Red Pilot Light:	120 V., 60 Hz. or 110 V., 50 Hz..	KYC-115A	32.	22		
			KYC-115B	32.	22		
			KYC-115C	32.	22		
			KYC-115D	32.	22		
2	Start-Stop.....	Lockout on Stop.....	KYC-201	35.	16	16	
	Start-Stop.....		KYC-203	40.	16	16	
	Forward-Reverse.....		KYC-204	35.	16	16	
	Up-Down.....		KYC-205	35.	16	16	
	Open-Close.....		KYC-206	35.	16	16	
	High-Low.....	Maintained Contact.....	KYC-208	35.	16	16	
	Start-Stop.....		KYC-210	35.		111	
	On-Off.....		KYC-211	35.		111	
3	Forward-Reverse-Stop.....	Lockout on Stop.....	KYC-301	50.	16	16	16
	Up-Down-Stop.....		KYC-302	50.	16	16	16
	Open-Close-Stop.....		KYC-303	50.	16	16	16
	High-Low-Stop.....		KYC-304	50.	16	16	16
	Start-Jog-Stop.....		KYC-305	50.	16	16	16
	Forward-Reverse-Stop.....	Lockout on Stop.....	KYC-308	55.	16	16	16
	Up-Down-Stop.....		KYC-309	55.	16	16	16
	Open-Close-Stop.....		KYC-310	55.	16	16	16
	High-Low-Stop.....		KYC-311	55.	16	16	16
	Start-Jog-Stop.....		KYC-312	55.	16	16	16
	Start-Stop.....	With Red Pilot Light:					
			120 V., 60 Hz. or 110 V., 50 Hz..	KYC-315A	56.	22	16
			208-220 V., 50-60 Hz..	KYC-315B	56.	22	16
			480 V. 60 Hz. or 440 V., 50 Hz..	KYC-315C	56.	22	16
			600 V., 60 Hz. or 550 V., 50 Hz..	KYC-315D	56.	22	16
		With Red Pilot Light:					
			115 V., ac or dc..	KYC-316A	54.	43	16
			230 V., ac or dc..	KYC-316B	54.	23	16
	Start-Stop.....						

ORDERING INFORMATION REQUIRED

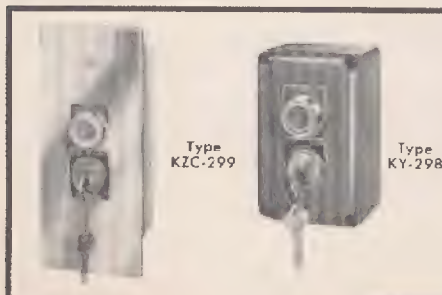
1. Class and type number.
2. Factory assembled stations are available with up to 30 control units. Prices and ordering information for stations not listed here may be obtained from any Square D Field Office.

SEPARATE COMPONENTS FOR CUSTOMER ASSEMBLY

ENCLOSURES: Order separate NEMA 4 stainless steel enclosures from the following table.

No. of Units	Std. Conduit Hubs (Installed in Bottom) †	Class 9001 Type	Price
1	(1) 3/4" - 14	KYC-1	\$ 18.
2	(1) 3/4" - 14	KYC-2	19.
3	(1) 3/4" - 14	KYC-3	26.
4	(1) 3/4" - 14	KYC-4	34.
6	(1) 3/4" - 14	KYC-6	50.
9	(1) 1" - 11 1/2	KYC-9	62.
12	(1) 1 1/4" - 11 1/2	KYC-12	75.
16	(1) 1 1/2" - 11 1/2	KYC-16	99.
20	(1) 1 1/2" - 11 1/2	KYC-20	110.
25	(2) 1 1/2" - 11 1/2	KYC-25	140.
30	(2) 1 1/2" - 11 1/2	KYC-30	165.

†Box is reversible to allow conduit entry at top.



SECURITY PUSH BUTTON STATIONS

DESIGNED FOR THE OVERHEAD DOOR INDUSTRY

Cover cannot be removed without key. Key is standard type which permits master keying.

Description	Cast Enclosure		Satin Chrome Finish Flush Mtd. w/box	
	Type	Price	Type	Price
Key Operator Only (Corbin Lock).....	KY-198	\$33.	KZC-198	\$38.
Key Operator Only (Yale Lock).....	KY-199	33.	KZC-199	38.
Key Operator with Stop Button (Corbin Lock).....	KY-298	40.	KZC-298	45.
Key Operator with Stop Button (Yale Lock).....	KY-299	40.	KZC-299	45.

NOTE: Corbin locks have chrome finish. Yale locks have brass finish.



SCHEDULE DS-1 DISCOUNT

PAGE 175

OIL-TIGHT CONTROL UNITS—TYPE T

CLASS
9001

PUSH BUTTONS

600 VOLTS AC OR DC MAX.

Description	Color of Button Insert	Operator Only (Without Contact Block)		Operator with Timed Contacts (Time Delay After Release of Button)	
		Type	Price†	Type	Price†
Standard Half Guard	All Colors	• TR-50	\$3.	• TRD-150	\$18.
	Black	TR-1	3.	TRD-101	18.
	Red	TR-2	3.	TRD-102	18.
	Green	TR-15	3.	TRD-115	18.
Full Guard	All Colors	• TR-51	3.	• TRD-151	18.
	Black	TR-6	3.	TRD-106	18.
	Red	TR-7	3.	TRD-107	18.
	Green	TR-30	3.	TRD-130	18.
Extended Guard	All Colors	• TR-52	3.	• TRD-152	18.
	Black	TR-35	3.	TRD-135	18.
	Red	TR-36	3.	TRD-136	18.
	Green	TR-37	3.	TRD-137	18.
Without Guard	All Colors	• TR-53	3.	• TRD-153	18.
	Black	TR-13	3.	TRD-113	18.
	Red	TR-14	3.	TRD-114	18.
	Green	TR-58	3.	TRD-158	18.
1 3/8" Diameter Mushroom Button	Black	TR-3	6.	TRD-103	21.
	Red	TR-4	6.	TRD-104	21.
	Green	TR-20	6.	TRD-120	21.
	Brown	TR-21	6.	TRD-121	21.
	Yellow	TR-22	6.	TRD-122	21.
	Orange	TR-23	6.	TRD-123	21.
2 1/4" Diameter Mushroom Button	Black	TR-10	6.	TRD-110	21.
	Red	TR-11	6.	TRD-111	21.
	Green	TR-25	6.	TRD-125	21.
	Brown	TR-26	6.	TRD-126	21.
	Yellow	TR-27	6.	TRD-127	21.
	Orange	TR-28	6.	TRD-128	21.

• The universal push buttons listed consist of a basic operator plus seven different color inserts. Any of the above operators can be purchased with any of seven colors. Consult General Industry Catalog or your local Square D Office.

† Timing period adjustable from 0.2 second to 1 minute. Contact ratings — 300 volts maximum.

▲ Tandem mounting. One additional contact block can be mounted on Type TF.

✚ Overlapping contacts. A2 closes before B1 opens. For use with Type TR operators only.

* Sequencing contacts. A2 closes before B2.

CONTACT BLOCKS

Type	Price
TA	
A1	\$3.00
A2	
TA-1	1.50
TA-2	1.50
TB	
A1	6.00
A2	
B1	6.00
B2	
TC	3.00
TD	3.00
*TE	7.50
A1	6.00
A2	
B1	6.00
B2	
TF	6.00
C1	6.00
C2	
D1	6.00
D2	
TE-1	3.00
A1	3.00
A2	

Contact Blocks



Push Button Standard with Half Guard



1 3/8" Diameter Mushroom Button

COLOR INSERTS—SELECTOR SWITCH

(Orders must specify Min. quantity of 10 or multiple of 10 in any one color.)

Color	Selector Switch			Selector P.B.		
	Type	Min. Order Qty.	Price Each	Type	Min. Order Qty.	Price Each
Black	T-4BK	10	\$.10	T-5BK	10	\$.10
Red	T-4RD	10	.10	T-5RD	10	.10
Green	T-4GN	10	.10	T-5GN	10	.10
Brown	T-4BN	10	.10	T-5BN	10	.10
Yellow	T-4YW	10	.10	T-5YW	10	.10
Orange	T-4OE	10	.10	T-5OE	10	.10
Blue	T-4BE	10	.10	T-5BE	10	.10

COLOR INSERTS FOR PUSH BUTTONS

(Orders must specify Min. quantity of 10 or multiples of 10 in any one color.)

Color	Type	Price Each	Min. Order Quantity
Black	T-6BK	\$.05	10
Red	T-6RD	.05	10
Green	T-6GN	.05	10
Brown	T-6BN	.05	10
Yellow	T-6YW	.05	10
Orange	T-6OE	.05	10
Blue	T-6BE	.05	10

ACCESSORIES AND ATTACHMENTS

Description	Features	Type	Price
Padlock Attachments	Latch type for push buttons (holds button depressed).	TL-1	\$3.00
	Cover type for push buttons (prevents depressing button).	TL-2	3.00
	Window in cover (prevents operation of selector switch or push button).	TL-3	3.00
	Latch type for push buttons with Type TU protective cap (holds button depressed), stainless steel	TL-5	5.00
Maintained Contact Attachment	Use with two Type TR push buttons and one contact block to obtain maintained contact.	TM-1	3.00
Wobble Stick Operator	Momentary contact push button with wobble stick attachment. Price includes a Type TN-2 legend plate with standard markings. (Order contact block separately.)	TW-1	6.00
Wrench	For easy installation of oil-tight units.	T-1	3.00
Closing Plate	For covering unused holes in enclosure cover.	K-11	1.00
Protective Caps	Keeps metal shavings and other matter from accumulating on units.	TU-1	2.00
	Can be used with TN Legend Plate (Not suitable for NEMA 4 application — See page 156 for water-tight protective caps)	TU-2	2.00
	Black	TU-3	2.00
	Red	TU-4	2.00
	Blue	TU-5	2.00
	Brown	TU-6	2.00
Trim Washer	May be used on all control units in place of legend plate.	TN-5	.30



TN-200

SEPARATE LEGEND PLATE

A complete selection of legend plates are available. Refer to page 168 for listing as Type TN rather than Type KN.

2-POSITION SELECTOR-PUSH BUTTONS

Description	Operator only ‡				Price †
	Symbol 67, 68	Symbol 71, 72	Symbol 75, 76	Symbol 102, 82	
Standard Half Guard					
Black	TQ-1	TQ-2	TQ-3	TQ-26	\$6.8.
Red	TQ-4	TQ-7	TQ-8	TQ-28	
Full Guard					
Black	TQ-11	TQ-12	TQ-13	TQ-48	7.
Red	TQ-16	TQ-17	TQ-18	TQ-49	7.
Extended Guard					
Black	TQ-62	TQ-56	TQ-65	TQ-59	7.
Red	TQ-63	TQ-57	TQ-66	TQ-60	7.

‡ To obtain symbols 67, 71, 75, 102 use either one Type TA or KA1 contact block. For symbols 68, 72, 76, 82 use either one Type TB or two KA1 contact blocks. Order from Page 169 or 176. Symbols are the same as shown on Page 169 for the Type K selector push buttons.

† Prices include a Type TN-2 legend plate with standard markings shown on Page 173. Deduct \$0.30 if legend plate is not required. For legend plates with special markings, use additions shown on Page 173.



TYPE T—OIL-TIGHT CONTROL UNITS

CLASS
9001

2-POSITION SELECTOR SWITCHES

Left	Right	Description	Features	Operator Only	
				Type	Price †
		2-Position Maintained Contact	Standard Knob — Black.....	TS-1	\$ 4.
			Red.....	TS-112	4.
			Gloved Hand Knob.....	TS-21	8.
			Coin Operated.....	TSA-1	6.
			Key Operated.....	TS-1K▲	10.
		2-Position Spring Return From Left to Center	Standard Knob — Black.....	TS-14	8.
			Red.....	TS-122	8.
			Key Operated.....	TS-14K2	12.

★ To obtain symbol 44 use either one Type TA or Type KA-1 contact block. To obtain symbol 45 use either one Type TB or two Type KA-1 contact blocks.

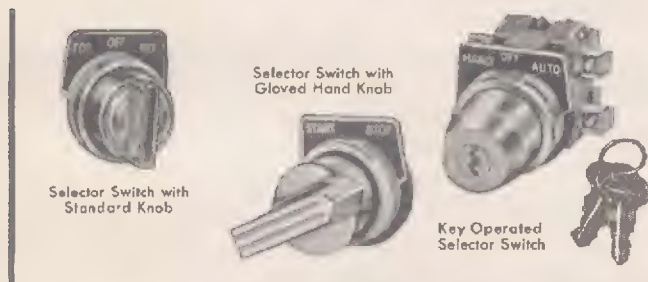
4-POSITION SELECTOR SWITCHES‡ (MAINTAINED CONTACT)

	Symbol	Features	Operator Only	
			Type	Price
A1	112	Standard Knob — Black.....	TS-401	\$ 4.
A2		Red.....	TS-402	4.
B1		Gloved Hand Knob.....	TS-49	8.
B2		Key Operated.....	TS-400K▲	10.

● Price includes blank TN2 or TN3 N.P. add \$1. for any marking.

‡ See Page 176 for listing of separate selector switch inserts.

● To obtain symbols 48, 52, and 56 use either one Type TA or KA-1 contact block. To obtain symbols 49, 53, 57, and 112 use either one Type TB or two KA-1 contact blocks.



3-POSITION SELECTOR SWITCHES‡

Left	Center	Right	Description	Features	Operator Only	
					Type	Price †
			3-Position Maintained Contact	Standard Knob — Black.....	TS-2	\$ 4.
				Red.....	TS-142	4.
				Gloved Hand Knob.....	TS-22	8.
				Coin Operated.....	TSA-2	6.
				Key Operated.....	TS-2K▲	10.
			3-Position Spring Return From Both Sides to Center	Standard Knob — Black.....	TS-8	8.
				Red.....	TS-202	8.
				Gloved Hand Knob.....	TS-35	10.
				Key Operated.....	TS-8K5	12.
			3-Position Maintained Contact	Standard Knob — Black.....	TS-3	4.
				Red.....	TS-152	4.
				Gloved Hand Knob.....	TS-23	8.
				Coin Operated.....	TSA-3	6.
				Key Operated.....	TS-3K▲	10.
			3-Position Spring Return From Both Sides to Center	Standard Knob — Black.....	TS-9	6.
				Red.....	TS-212	6.
				Gloved Hand Knob.....	TS-36	10.
				Key Operated.....	TS-9K5	12.
			3-Position Maintained Contact	Standard Knob — Black.....	TS-4	4.
				Red.....	TS-162	4.
				Gloved Hand Knob.....	TS-24	8.
				Coin Operated.....	TSA-4	6.
				Key Operated.....	TS-4K▲	10.
			3-Position Spring Return From Both Sides to Center	Standard Knob — Black.....	TS-10	6.
				Red.....	TS-222	6.
				Gloved Hand Knob.....	TS-37	10.
				Key Operated.....	TS-10K5	12.

▲ Select proper key withdrawal code from Table on Page 166. Positions marked "yes" are those in which key can be withdrawn.

SEPARATE COLOR CAPS FOR PILOT LIGHTS AND ILLUMINATED PUSH BUTTONS

Color	Plastic Cap for Standard Pilot Lights Only	Glass Cap for Standard or Push-To-Test Pilot Lights	Plastic Cap for Illuminated Push Buttons	Price
	Type	Type	Type	
Red	R1	R2	R3	\$0.70
Green	G1	G2	G3	0.70
Amber	A1	A2	A3	0.70
Blue	B1	B2	B3	0.70
Clear	C1	C2	C3	0.70
White	W1	W2	W3	0.70

PILOT LIGHTS AND ILLUMINATED PUSH BUTTONS

Description	Voltage and Frequency	Standard Pilot Lights			Push-to-Test Pilot Lights		Illuminated Push Buttons			
		With Plastic Color Cap		Price †	With Glass Color Cap		Without Guard‡		With Guard	
		Type	Type		Type	Price †	Type	Price †	Type	Price †
With Transformer and 6-8 Volt Lamp▲▲	120 V., 60 Hz., 110 V., 50 Hz.	TP-1*1	TP-1*1	\$11.	TP-21*2	\$14.	TP-35*3	\$14.	TP-41*3	\$15.
	208-220 V., 50-60 Hz.	TP-3*1	TP-3*2	11.	TP-23*2	14.	TP-37*3	14.	TP-43*3	15.
	480 V., 60 Hz., 440 V., 50 Hz.	TP-5*1	TP-5*2	11.	TP-25*2	14.	TP-39*3	14.	TP-45*3	15.
	600 V., 60 Hz., 550 V., 50 Hz.	TP-6*1	TP-6*2	11.	TP-26*2	14.	TP-40*3	14.	TP-46*3	15.
With Full Voltage Lamp	6-8 V., AC or DC	TP-12*1	TP-12*2	9.	TP-27*2	12.	TP-47*3	12.	TP-54*3	13.
	14 V., AC or DC	TP-13*1	TP-13*2	9.	TP-28*2	12.	TP-48*3	12.	TP-55*3	13.
	18 V., AC or DC	TP-14*1	TP-14*2	9.	TP-29*2	12.	TP-49*3	12.	TP-56*3	13.
	24 V., AC or DC	TP-15*1	TP-15*2	9.	TP-30*2	12.	TP-50*3	12.	TP-57*3	13.
	32 V., AC or DC	TP-16*1	TP-16*2	9.	TP-31*2	12.	TP-51*3	12.	TP-58*3	13.
	120 V., AC or DC▲	TP-19*1	TP-19*2	9.						

▲ Full voltage bulb not recommended for applications where severe vibration is encountered or where long bulb life is essential. For these applications use transformer type with 6-8 volt lamp.

‡ Can be converted to guarded type if desired. Separate guard assembly may be ordered as Class 9001 Type T-2, \$1.00.

▲▲ A flashing type lamp, GE#455, can be substituted for the standard GE #44 on any transformer type pilot light.



*IMPORTANT — Type numbers listed must be completed by inserting appropriate color cap code letter. Prices shown include color cap. If cap is not required, order as TP1, TP-21, TP-35, etc., and deduct \$0.70.

Color	Red	Green	Amber	Blue	Clear	White
Code Letter	R	G	A	B	C	W

† Prices include a Type TN-2 legend plate with standard markings shown on Page 173. For KN-2 nameplate deduct \$0.30 if legend plate is not required. For legend plates with special markings, use additions shown on Page 173.



SCHEDULE DS-1 DISCOUNT

PAGE 177

FOOT SWITCHES—HEAVY DUTY & STANDARD DUTY

Foot switches are used to control many industrial processes, while leaving the operator's hands free to perform other functions. Switches are available in a wide choice of contact arrangements, ratings and enclosure styles.

HEAVY DUTY INDUSTRIAL FOOT SWITCHES

OIL-TIGHT, WATER-TIGHT, DUST-TIGHT AND DRIP-TIGHT ENCLOSURE
NEMA TYPES 2, 4 and 13 — QUICK-MAKE AND QUICK-BREAK CONTACTS

CLASS
9002

600 VOLTS MAX. AC or DC

Description	Features	With Pedal Guard		With Pedal Guard and Side Shields		Without Guard or Shields	
		Type	Price	Type	Price	Type	Price
Single Pole Double Throw	Spring Return With Mechanical Latch	AW-2	\$16.	AW-17	\$18.	AW-1	\$15.
Two Pole Double Throw	Spring Return With Mechanical Latch	AW-14	23.	AW-18	25.	AW-13	22.
Two Stage (One Pole Each Stage) *	Spring Return With Mech. Latch in 1st Stage. With Mech. Latch in 2nd Stage.	AW-6	24.	AW-19	26.	AW-5	23.
Single Pole Single Throw	Maintained Contact Ratchet Type ‡	AW-9	31.				
		AW-10	31.				
		AW-12	23.	AW-20	25.	AW-11	22.

Except for ratchet type switches, each pole consists of a normally open and normally closed contact which are electrically separate but must be used on the same polarity. ‡ Contacts maintain position until pedal is again depressed. Rated 250 volts ac or dc maximum.

HEAVY DUTY FOOT SWITCHES

600 VOLTS MAX. AC, 250 VOLTS MAX. DC

Function	Lever Position (R.H. or L.H. Side)	Features	Cast Iron General Purpose Enclosure NEMA Type 1		Water-tight Enclosure NEMA Type 4		For Hazardous Locations Class I Groups C & D Class II Groups E, F and G NEMA 7-9	
			Type	Price	Type	Price	Type	Price
Single Foot Switches	R. H. L. H. R. H.	Spring Return Spring Return With Mechanical Latch	FB-5 FB-6 FB-7	\$20. 20. 31.	FBW-5 FBW-6 FBW-7	\$31. 31. 42.	FBR-6 FBR-8 FBR-7	\$39. 39. 50.
Double Foot Switches	One Lever on Each Side Spr. Return	Marked "Up-Down" Marked "Forward-Reverse"	FB-8 FB-9	40. 40.	FBW-8 FBW-9	62. 62.		

*Contact Symbol — Two Stage

Contact Block	Con-tacts	Pedal		
		Up	Half Down	Full Down
1	A1		X	X
	B1	X		
2	A2	X	x	
	B2			X

Each switch supplied with one N. O. contact can be changed to N. C. in the field without use of tools.

Class 9002, Type AT-4 Foot Switch was designed for Class 5060 AT Brakes and Controllers. Four control circuits and four control positions make it adaptable for other applications. Electrical rating is same as for Class 9002 Type AW Switch.

ELECTRICAL RATINGS FOR TYPE AW FOOT SWITCHES

AC AMPERES					DC AMPERES				
Volts	Inductive Pilot Duty 35% Power Factor			Resistive 75% Power Factor	Volts	Inductive Pilot Duty			Res- istive
	Make	Break	Con- tinuous			Make and Break			
						Single Throw	Double Throw	Con- tinuous	
				Make Break, Con- tinuous					Con- tinuous

ELECTRICAL RATINGS FOR TYPES AW-1 THRU AW-10, AW-17, AW-19, AT-4

110	40	15	15	15	115	2.0	0.5	15	15
220	20	10	15	15	230	0.5	0.2	15	15
440	10	6	15	15	600	0.1	0.02	15	15
600	8	5	15	15					

ELECTRICAL RATINGS FOR TYPES AW-13, AW-14, AW-15, AW-18†

0-115	30	3	10	10	115	1.0	0.2	10	10
					230	0.3	0.1	10	10
115-600	3450 VA	345 VA	10	10	600	0.1		10	10

ELECTRICAL RATINGS FOR TYPES AW-11, AW-12, AW-20

115	36	6			125	2.2			
230	18	3			250	1.1			

† Double throw switches are rated 250 volts dc maximum.

STANDARD DUTY FOOT SWITCHES

300 VOLTS MAX. AC, 250 VOLTS MAX. DC

Contact Arrangement	General Purpose Enclosure		AC Ratings			DC Ratings	
	Type	Price	Volts	Poly-phase	Single phase	Volts	Max. HP
2—N. O.	CG-1	\$11.	110	1	1	32	1/4
2—N. C.	CG-2	15.				110	1/4
1—N. O., 1—N. C.	CG-3	15.	220	1	1	220	1/4

Contacts are electrically separate — no polarity restrictions.

ORDERING INFORMATION REQUIRED: Class and type number.

Type	Price
AT-4	\$105.



Class 9002
Type AT-4



Type AW with
Pedal Guard



Type CG-1



Type FBW-6






LIMIT SWITCHES SELECTION GUIDE

Part 1 of the simplified selection guide allows you to choose the limit switch LINE which will best handle a particular application. Once the limit switch line has been chosen, move on to Part 2.

CLASS
9007

LIMIT SWITCH SELECTION GUIDE — PART 1

 <p>HEAVY DUTY PRECISION OIL-TIGHT TYPE B Pages 180-188</p>	<p>Use Type B on all applications requiring a heavy duty, precision oil-tight limit switch. Although designed for rugged applications, it is also an excellent choice for general or light duty applications. Also can be used in foundry or mill type applications. The Type B will handle the vast majority of applications and should be selected first unless one of the features listed below is required.</p>
 <p>HEAVY DUTY OIL-TIGHT TYPE T Page 189</p> <p>FOUNDRY TYPE FT Page 190</p>	<p>If load exceeds Type B contact ratings, if a required operating sequence is not available on the Type B or if high trip and reset forces are required, use the Type T.</p> <p>Use Type FT in foundries or mills where a rugged heavy duty limit switch is required and where hot, falling sand or similar foreign material could cause jamming of standard limit switches.</p>
 <p>PRECISION OIL-TIGHT TYPE AW Page 191</p>	<p>Use Type AW for replacement purposes or when called for on existing specifications. Use Type B on new applications except where micrometer adjustment on plunger Type AW is required.</p>

LIMIT SWITCH SELECTION GUIDE — PART 2

LEVER ARM TYPE

1. **Standard 10° Pre-Travel Lever Type Switches** will handle about 90% of all applications. Type B is recommended first choice. See page 180.
 - a. Select **Standard CW and CCW** version — will handle most applications with no conversion necessary. Where CW only or CCW only is required, switch can be easily converted by moving one cam pin in turret head.
 - b. Select **plug-in standard box** — trend is toward plug-in switches because of easy replacement. Also the standard box is the same size for 1 or 2 poles.
 - c. The above selection leads you to
 - Type B54B2 — Single pole, \$14.50
 - Type B62B2 — Two pole, \$17.50
 - Type B64B2 — Neutral position, \$18.50
2. For specialty lever type switches, see below.
 - a. **Low differential type** with 5° pretravel is generally required where the differential must be small and should not be selected for the 5° pretravel feature. Desired trip point can usually be obtained by adjusting the lever arm and/or cam.
Recommended Type — B54A2, \$15.50. For others, see page 180.
 - b. **Light operating torque type** is used where the operating torque of the standard pretravel type is too high.
Recommended Type — Spring Return Type B54N2, \$17.50, Gravity Return Type B54NC2, \$19.50. For others, see page 180.
 - c. **Maintained contact type** is used where a memory device is required. This type "remembers" that a cam has passed even though the cam is no longer present.
Recommended Type — B54C, \$17.50. For resetting on return stroke, select a Type LA-4 forked lever arm, \$2.50. For resetting by another cam, select Type LA-5 or LA-6, \$2.50. Select other types on basis of customer requirements, see pages 180-181.
3. If a space problem exists, select the compact box, see page 180.
4. If other enclosure types are required, see pages 186-187.

OTHER TYPES

1. **Plunger Type** — Plunger type switches are used where short, controlled machine movements are present and where space or mounting does not permit a lever type switch.
Recommended Types — **Roller Plunger** — B54F, \$19 or B54D, \$17.
Push Rod Plunger — B54E, \$16.
For others, see pages 182-183.
2. **Wobble Stick and Cat Whisker Types** — These limit switches are suitable for application on conveyors to detect or count parts or as a hand operated safety device. Wobble stick and cat whisker limit switches can be operated from any direction. Cat Whisker switches are used to detect very light weight parts.
Recommended Types — **Wobble** — B54J or B54K, \$16.
Cat Whisker — B54L, \$12.
For others, see page 183.
3. **Remote Cable Operated Type** — Remote cable switches can be used where limited space prevents mounting a standard limit switch. The cable operator can be mounted where needed and the basic switch mounted where space permits.
See page 184.

SELECTION OF LEVER ARMS

1. Standard lever arms for limit switches are as follows:
 - Type B Limit Switch — Type MA-11 Lever Arm, 1½" long with a ¾" diameter, ¼" wide roller, \$1.50.
 - Type T and FT Limit Switch — Type B1 Lever Arm, 1½" long with a ¾" diameter, ¼" wide roller, \$2.00.
 - Type AW Limit Switch — Type BA-1 Lever Arm, 1¾" long with a ¾" diameter, ¼" wide roller, \$1.50.
2. For other lever arms see below:
 - Type B and AW Limit Switches — Table 1B, page 181.
 - Type T and FT Limit Switches — Table 3B, page 189.



SCHEDULE DS-1 DISCOUNT

PAGE 179




LIMIT SWITCHES—TYPE B

HEAVY DUTY PRECISION TURRET HEAD TYPE — SINGLE POLE & TWO POLE

OIL-TIGHT, WATER-TIGHT, DUST-TIGHT AND DRIP-TIGHT ENCLOSURE — NEMA TYPES 2, 4 AND 13

CLASS
9007

TABLE 1A — LEVER-ARM TYPE (WITHOUT LEVER ARM) Select lever arms from Page 181, Table 1B.
Select special features from page 185, Table 1F. See page 188 for ratings and dimensions.

SELECT TURRET HEAD		Standard Pre-Travel Spring Return — Direction of Operation Convertible				Low Differential Spring Return — Direction of Operation Convertible				Light Operating Torque Direction of Operation Convertible				Gravity Return—NEMA 1 only Type FA-I Lever Arm Recom- mended				Maintained Contact	
SELECT BASIC SWITCH		Type No. of Complete Switch				Type No. of Complete Switch				Type No. of Complete Switch				Type No. of Complete Sw.				Type No. of Complete Sw	
		Std. CW & CCW	CW Only	CCW Only	Price	Std. CW & CCW	CW Only	CCW Only	Price	Std. CW & CCW	CW Only	CCW Only	Price	Std. CW & CCW	Price	Std. CW & CCW	Price		
	1 N.O. 1 N.C.	B54B2	B54B	B54B1	\$14.50	B54A2	B54A	B54A1	\$15.50	B54N2	B54N	B54N1	\$17.50	B54NC2	\$18.50	B54C	\$17.50		
	2 N.O. 2 N.C.	B62B2	B62B	B62B1	17.50	B62A2	B62A	B62A1	18.50					B62NC2	22.50	B62C	20.50		
	2 N.O. 2 N.C. Neutral Position	B64B2			18.50	B64A2	...	...	19.50								
	2 N.O. 2 N.C. Two Stage	B66B2	B66B	B66B1	20.50	B66A2	B66A	B66A1	21.50										
	1 N.O. 1 N.C.	B53B2	B53B	B35B1	14.50	B53A2	B53A	B53A1	15.50	B53N2	B53N	B53N1	17.50	B53NC2	19.50	B53C	17.50		
	1 N.O. Contactless	B55B2	B55B	B55B1	28.50	B55A2	B55A	B55A1	30.50	B55N2	B55N	B55N1	32.50			B55C	32.50		
	1 N.C. Contactless	B57B2	B57B	B57B1	29.50	B57A2	B57A	B57A1	30.50	B57N2	B57N	B57N1	32.50			B57C	32.50		
	2 N.O. 2 N.C. Neutral Position	B61B2	B61B	B61B1	17.50	B61A2	B61A	B61A1	18.50					B61NC2	22.50	B61C	20.50		
	2 N.O. 2 N.C. Two Stage	B63B2			18.50	B63A2	....		19.50									
	2 N.O. 2 N.C.	B65B2	B65B	B65B1	20.50	B65A2	B65A	B65A1	21.50										
	1 N.O. 1 N.C.	B52B2	B52B	B52B1	14.50	B52A2	B52A	B52A1	15.50	B52N2	B52N	B52N1	17.50	B52NC2	19.50	B52C	17.50		
	1 N.O. 1 N.C.	B51B2	B51B	B51B1	14.50	B51A2	B51A	B51A1	15.50	B51N2	B51N	B51N1	17.50	B51NC2	19.50	B51C	17.50		
Nom- inal Oper- ating Data		Pre-travel			10°	5°				15°				16°			50°		
		Pre-travel Two Stage			10°	5°													
		Total travel			2½" after top sw. (field adjustable from 0" to 2½")	1¼" after top sw. (field adjustable from 0" to 1¼")													
		Differential			90°	90°				90				90°			90°		
		Reverse Overtravel			4	2				6"				7"			10"		
		Operating Torque			90°	90°				11 oz				90°			3 lb. in.		
		Repeat Accuracy— Linear travel of cam on 1½" lever arm			4½ lb.-in. 5 lb.-in.	4½ lb.-in. 5 lb.-in.				11 oz				5 oz. in. 1½ oz.-in.			3 lb. in. 3½ lb.-in.		
Replacement open type plug-in limit switches		The basic switch and turret head but less box and plug-in receptacle can be ordered by substituting the letters "BO" for the first "B" in the type number and deducting \$2. Example: Open type replacement for Type B54B is Type BOB4B \$12.50 each																	
Box and Plug-in Receptacle only		Standard 1 N.O. 1 N.C. Part No. 31032-099-50 \$2.00 Standard 2 N.O. 2 N.C. Part No. 31032-100-50 2.00 Compact 1 N.O. 1 N.C. Part No. 31032-098-50 2.00																	

ORDERING INFORMATION REQUIRED 1. Class and type number of limit switch.






LEVER ARMS

FOR TYPES B & AW LIMIT SWITCHES



CLASS
9007

TABLE 1B — LEVER ARMS ONLY — FOR TYPES B AND AW LIMIT SWITCHES

CAST LEVER ARM														OFFSET LEVER ARM							
	Length of Arm	Roller												Offset Lever Arm 2" Length, 3/16" Offset							
		Standard * 3/4" Dia. 1/4" Wide		Standard * 3/4" Dia. 5/8" Wide		Standard * 3/4" Dia. 1/4" Wide		Standard * 3/4" Dia. 5/8" Wide		Standard * 3/4" Dia. 1/4" Wide Roller on Opposite Side to Standard		Standard * 3/4" Dia. 1/4" Wide Roller on Opposite Side to Standard		Standard * 3/4" Dia. 5/8" Wide Roller on Opposite Side to Standard		Std. Roller *					
		Type	Price	Type	Price	Type	Price	Type	Price	Type	Price	Type	Price	Type	Price	Type	Price	Dia.	Width	Type	Price
	3/8"					AA-1	\$2.50	AA-2	\$2.50					AA-5	\$2.50	AA-6	\$2.50	5/8"	1/4"	KA-1	\$2.50
	1 1/8"	BA-11	\$1.50	BA-12	\$2.50	BA-1	1.50	BA-2	2.50	BA-15	\$1.50	BA-6	1.50	BA-6	2.50	BA-6	2.50	5/8"	5/8"	KA-2	2.50
	1 1/2"	MA-11	1.50	MA-12	2.50	MA-1	1.50	MA-2	2.50	MA-15	1.50	MA-5	1.50	MA-6	2.50	MA-6	2.50	3/4"	1/4"	KA-11	2.50
	2"	CA-11	2.50	CA-12	2.50	CA-1	2.50	CA-2	2.50	CA-15	2.50	CA-5	2.50	CA-6	2.50	CA-6	2.50	3/4"	5/8"	KA-1	2.50
	2 1/2"	DA-11	2.50	DA-12	2.50	DA-1	2.50	DA-2	2.50	DA-15	2.50	DA-5	2.50	DA-6	2.50	DA-6	2.50				
	3"	EA-11	2.50	EA-12	2.50	EA-1	2.50	EA-2	2.50	EA-15	2.50	EA-5	2.50	EA-6	2.50	EA-6	2.50				
Cast Lever Arm	Length of Arm	Nylon 3/4" Dia. 1/4" Wide		Nylon 5/8" Dia. 1/4" Wide		Nylon 5/8" Dia. 5/8" Wide		Nylon * 1" Dia. 5/8" Wide		Bakelite 1" Dia. 1/4" Wide		Ball Bearing 1 1/2" Dia. 1/2" Wide		Without Roller		SPECIAL LEVER ARMS					
		Type	Price	Type	Price	Type	Price	Type	Price	Type	Price	Type	Price	Type	Price	Delrin Roller 1 1/2" Dia. 1/4" Wide					
																Length Type Price					
																4" Straight JA-1 \$7.00					
																5" 90° Curved JA-1 7.00					
	3/8"			AA-8	\$2.50	AA-17	\$2.50	BA-13	\$2.50	BA-4	\$3.50	AA-9	\$3.50	AA-0	\$2.50	DAMPING ATTACHMENT					
	1 1/8"	BA-18	1.50	BA-8	1.50	BA-17	2.50	MA-13	2.50	MA-4	3.50	BA-9	3.50	MA-0	2.50	Generally not required for Type B. Consult local Square D field office for special problems.					
	1 1/2"	CA-18	2.50	CA-8	2.50	MA-17	2.50	CA-13	2.50	MA-4	3.50	MA-9	3.50	MA-0	2.50						
	2"	DA-18	2.50	DA-8	2.50	CA-17	2.50	CA-13	2.50	CA-4	3.50	CA-9	3.50	CA-0	2.50						
	2 1/2"	EA-18	2.50	DA-8	2.50	DA-17	2.50	DA-13	2.50	DA-4	3.50	DA-9	3.50	DA-0	2.50						
	3"	EA-18	2.50	EA-8	2.50	EA-17	2.50	EA-13	2.50	EA-4	3.50	EA-9	3.50	EA-0	2.50	Type <th>Price</th> <td colspan="2"></td> <td></td>	Price				
															GA-1	\$5.00					

FLAT STEEL LEVER ARM							ANGULAR ADJUSTABLE LEVER ARM											
 Flat Steel Lever Arm	Length of Arm	Roller						 Angular Adjustable Lever Arm	Roller (Can be changed from roller outside to roller inside position or vice versa in the field.)									
		Standard * 5/8" Dia. 1/4" Wide		Standard * 5/8" Dia. 5/8" Wide		Without Roller			Standard * 5/8" Dia. 1/4" Wide		Nylon 5/8" Dia. 1/4" Wide		Nylon 3/4" Dia. 1/4" Wide		Ball Bearing 1 1/8" Dia. 1/4" Wide			
		Type	Price	Type	Price	Type	Price		Roller Outside Type	Roller Inside Type	Roller Outside Type	Roller Outside Type	Price	Roller Outside Type	Price			
7/8"	AA-1S	\$2.50	AA-2S	\$2.50	AA-0S	\$2.50	7/8"	AA-1M	AA-5M	AA-8M	AA-18M	\$7.50	AA-9M	\$8.50				
1 1/8"	BA-1S	1.50	BA-2S	2.50	BA-0S	2.50	1 1/8"	BA-1M	BA-5M	BA-8M	BA-18M	7.50	BA-9M	8.50				
1 1/2"	CA-1S	2.50	CA-2S	2.50	CA-0S	2.50	1 1/2"	MA-1M	MA-5M	MA-8M	MA-18M	7.50	MA-9M	8.50				
2"	DA-1S	2.50	DA-2S	2.50	DA-0S	2.50	2"	CA-1M	CA-5M	CA-8M	CA-18M	7.50	CA-9M	8.50				
2 1/2"	EA-1S	2.50	EA-2S	2.50	EA-0S	2.50	2 1/2"	DA-1M	DA-5M	DA-8M	DA-18M	7.50	DA-9M	8.50				
3"							3"	EA-1M	EA-5M	EA-8M	EA-18M	7.50	EA-9M	8.50				

ADJUSTABLE LENGTH LEVER ARM														ROD TYPE LEVER ARM			
														Adjustable Length Lever Arm Adj. from 1/2" to 4"			
Description	Roller													Rod Type Lever Arm			
	Standard * 3/4" Dia. 1/4" Wide	Standard * 3/4" Dia. 5/8" Wide	Nylon 5/8" Dia. 1/4" Wide	Without Roller		Ball Brg. 1 1/2" Dia. 1/4" Wide	Nylon★ 1" Dia. 5/8" Wide	Delrin▲ 1 1/2" Dia. 5/8" Wide		Nylon 2" Dia. 1/4" Wide	Rubber Tire 2 1/4" Dia. 1/2" Wide			Rod	Type	Price	
	Type	Type	Type	Type	Price	Type	Type	Type	Price	Type	Price	Type	Price	10" Steel Rod . . .	FA-1	\$2.50	
Non-bendable	HA-1	HA-2	HA-4	HA-0	\$2.50	HA-24	HA-22	...	\$3.50	...	...	...	...	12" Spring Rod, Steel	FA-3	2.50
Bendable	HA-5	HA-6	HA-8	HA-9	2.50	HA-25	HA-23	HA-20	3.50	HA-26	\$5.00	HA-21	\$4.50	12" Spring Rod, Delrin	FA-5	3.50	
														Forked Rod			
														2 1/2" Spring Rods, Steel	LA-19	3.50	

ONE-WAY ROLLER LEVER ARM						FORKED ARM									
 One-Way Roller Cast Lever Arm	1 1/4" Dia. 1/4" Wide Roller					 90° Forked Arm 1 1/2" Length	Roller Position	Standard * 3/4" Dia. 1/4" Wide Rollers	Standard * 3/4" Dia. 1/4" Wide Rollers	Nylon 3/4" Dia. 1/4" Wide Rollers	Nylon 3/4" Dia. 1" Wide Rollers	Price	Ball Bearing 1 1/2" Dia. 1/4" Wide Rollers		
	Length of Arm	Cast Arm		Flat Steel Arm				Type	Type	Type	Type		Type	Type	Price
	1 3/8"	BA-3	\$4.50	BA-3S	\$4.50		Type	Type	Type	Type	Type	Type	Type	Type	Type
	1 1/2"	MA-3	4.50												
	2"	CA-3	4.50	CA-3S	4.50										
	2 1/2"	DA-3	4.50	DA-3S	4.50										
	3"	EA-3	4.50	EA-3S	4.50										
Length of Arm	Angular Adjustable Arm					R.H. Roller on Opp. Side	LA-4	LA-1	LA-16	LA-10	\$2.50	LA-7	\$3.50		
	Type		Price		LA-5		LA-2	LA-17	LA-11	2.50	LA-8	3.50			
	2"		CA-3M		\$9.50		LA-5	LA-3	LA-18	LA-12	2.50	LA-9	3.50		

*Standard roller is hardened oil-impregnated sintered iron.
 ★ Recommended in place of Types BA-7, CA-7, FA-7, MA-7, HA-3 and HA-7 lever arms with steel roller. If necessary the latter arms can still be furnished at \$3.50 each.
 ▲ Registered trademark of DuPont.

LIMIT SWITCHES—TYPE B












HEAVY DUTY PRECISION TURRET HEAD TYPE — SINGLE POLE & TWO POLE

OIL-TIGHT, WATER-TIGHT, DUST-TIGHT AND DRIP-TIGHT ENCLOSURE — NEMA TYPES 2, 4 AND 13

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TABLE 1C — PLUNGER TYPE

Select special features from page 185, Table 1F. See page 188 for ratings and dimensions.

		SELECT TURRET HEAD														
		SELECT BASIC SWITCH														
			Contacts	Type	Price	Type	Price	Type	Price	Type	Price	Type	Price			
	Standard Box Plug-in		1 N.O. 1 N.C.	B54D	\$17.	B54E	\$16.	B54ED	\$17.	B54F	B54FH	\$19.	B54G	\$17.	B54GD	\$18.
			2 N.O. 2 N.C.	B62D	20.	B62E	19.	B62ED	20.	B62F	B62FH	22.	B62G	20.	B62GD	21.
			2 N.O. 2 N.C. Two Stage	B66D	23.	B66E	22.	B66ED	23.	B66F	B66FH	25.	B66G	23.	B66GD	24.
	Standard Box Non- Plug-in		1 N.O. 1 N.C.	B53D	17.	B53E	16.	B53ED	17.	B53F	B53FH	19.	B53G	17.	B53GD	18.
			1 N.O. Con- tactless	B55D	32.	B55E	31.	B55ED	32.	B55F	B55FH	34.	B55G	32.	B55GD	33.
			1 N.C. Con- tactless	B57D	32.	B57E	31.	B57ED	32.	B57F	B57FH	34.	B57G	32.	B57GD	33.
			2 N.O. 2 N.C.	B61D	20.	B61E	19.	B61ED	20.	B61F	B61FH	22.	B61G	20.	B61GD	21.
			2 N.O. 2 N.C. Two Stage	B65D	23.	B65E	22.	B65ED	23.	B65F	B65FH	25.	B65G	23.	B65GD	24.
	Compact Box Plug-in		1 N.O. 1 N.C.	B52D	17.	B52E	16.	B52ED	17.	B52F	B52FH	19.	B52G	17.	B52GD	18.
	Compact Box Non- Plug-in		1 N.O. 1 N.C.	B51D	17.	B51E	16.	B51ED	17.	B51F	B51FH	19.	B51G	17.	B51GD	18.
Nom- inal Oper- ating Data	Pre-travel.		.08"													
	Pre-travel Two Stage	Top Switch	.08"													
		Bottom Switch	.01" after top switch (field adjustable from .00" to .01")													
	Total-travel.		.25"													
	Differential.		.03"													
	Oper- ating Force	1 Pole	3 lbs.													
		2 Pole	4 lbs.													
Repeat Accuracy.			± .001"													
Replacement open type plug-in limit switches			The basic switch and turret head but less box and plug-in receptacle can be ordered by substituting the letters "BO" for the first "B" in the type number and deducting \$2. Example: Open type replacement for Type B54D is Type B054D, \$15, each.													
Box and plug-in receptacle only			Standard 1 N.O.—1 N.C. Part No. 31032-95-50, \$2.00 Standard 2 N.O.—2 N.C. Part No. 31032-100-50, 2.00 Compact 1 N.O.—1 N.C. Part No. 31032-98-50, 2.00													





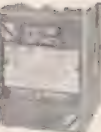



TYPE B—LIMIT SWITCHES

HEAVY DUTY PRECISION TURRET HEAD TYPE — SINGLE POLE & TWO POLE
OIL-TIGHT, WATER-TIGHT, DUST-TIGHT AND DRIP-TIGHT ENCLOSURE — NEMA TYPES 2, 4 AND 13

TABLE 1D — PLUNGER (Cont'd), WOBBLE STICK, CAT WHISKER & AIR OPERATED TYPES
Select special features from page 185, Table 1F. See page 185 for ratings and dimensions.

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	SELECT TURRET HEAD														
	SELECT BASIC SWITCH														
		Contacts	Type	Price	Type	Price	Type	Price	Type	Price	Type	Price	Type	Price	
	Standard Box Plug-in	1 N.O. 1 N.C.	B54H	\$20.	B54R★	\$16.	B54J	\$16.	B54K	B54KC	\$16.	B54L	\$12.	B54P	\$26.
		2 N.O. 2 N.C.	B62H	23.	B62R★	19.	B62J	19.	B62K	B62KC	19.	B62L	15.	B62P	29.
		2 N.O. 2 N.C. Two Stage			B66R★	22.	B66J	22.	B66K	B66KC	22.	B66L	19.	B66P	32.
	Standard Box Non- Plug-in	1 N.O. 1 N.C.	B53H	20.	B53R★	16.	B53J	16.	B53K	B53KC	16.	B53L	12.	B53P	26.
		1 N.O. Con- tactless	B55H	35.	B55R★	31.	B55J	31.	B55K	B55KC	31.	B55L	27.		
		1 N.C. Con- tactless	B57H	35.	B57R★	31.	B57J	31.	B57K	B57KC	31.	B57L	27.		
		2 N.O. 2 N.C.	B61H	23.	B61R★	19.	B61J	19.	B61K	B61KC	19.	B61L	15.	B61P	29.
		2 N.O. 2 N.C. Two Stage			B65R★	22.	B65J	22.	B65K	B65KC	22.	B65L	19.	B65P	32.
	Compact Box Plug-in	1 N.O. 1 N.C.	B52H	20.	B52R★	16.	B52J	16.	B52K	B52KC	16.	B52L	12.	B52P	26.
	Compact Box Non- Plug-in	1 N.O. 1 N.C.	B51H	20.	B51R★	16.	B51J	16.	B51K	B51KC	16.	B51L	12.	B51P	26.
Nom- inal Oper- ating Data	Pre-travel.		.14"		.08"		10° (Any Direction)				20° (Any Direction)		Trip Pressure		
	Pre-travel Two Stage	Top Switch			.08"		10° (Any Direction)				20° (Any Direction)				
		Bottom Switch			.01" after top sw. (field adjustable from .00" to .01")		2¼° after top switch (field adjustable from 0° to 2¼°)				4° after top sw. (field adjustable from 0° to 4°)				
	Total-travel.		.25"		.25"		90°				90°		Differential		
	Differential.				.03"		5°				10°				
	Operating Force or Torque	1 Pole	6 lbs. trip 5 lbs. reset		3 lbs.		3 lb.-in.				7 oz.-in.		1 Pole—10-20 p.s.i. 2 Pole—20-40 p.s.i.		
2 Pole			7 lbs. trip 6 lbs. reset		4 lbs.		3½ lb.-in.				10 oz.-in.				
	Replacement open type plug-in limit switches			The basic switch and turret head but less box and plug-in receptacle can be ordered by substituting the letters "BO" for the first "B" in the type number and deducting \$2. Example: Open type replacement for Type B54J is Type BO54J, \$14. each.											
Box and plug-in receptacle only			Standard 1 N.O.-1 N.C. Standard 2 N.O.-2 N.C. Compact 1 N.O.-1 N.C.						Part No. 31032-099-50, \$2.00 Part No. 31032-100-50, 2.00 Part No. 31032-098-50, 2.00						

★Price does not include mushroom button. Type number must be completed by adding proper button number from Table 1G on page 185 and button price added to above price. Example: Type B54R with Type NR-2, \$16. plus \$3. or \$19. list total.
▲Registered trademark of Du Pont.



SCHEDULE DS-1 DISCOUNT

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LIMIT SWITCHES—TYPE B


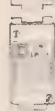




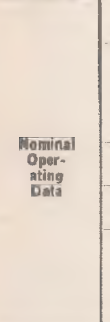
HEAVY DUTY PRECISION TURRET HEAD TYPE—SINGLE POLE & TWO POLE

OIL-TIGHT, WATER-TIGHT, DUST-TIGHT AND DRIP-TIGHT ENCLOSURE — NEMA TYPES 2, 4, AND 13

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TABLE 1E — REMOTE CABLE OPERATED TYPES

Select special features from page 185, Table 1F. See page 188 for ratings and dimensions.

	SELECT TURRET HEAD		Remote Cable Type with Push Rod Operator Total number of degrees bend Maximum — 270° Minimum Bend Radius — 5"								Remote Cable Type with Turret Head Operator IMPORTANT: Type numbers listed in table must be completed by inserting appropriate turret head code letter in place of asterisk (*) and adding turret head price addition to base price Example: The price of a Class 9007 Type B54B2-SB36 equals the Type B54*-SB36 base price of \$37, plus turret head code letter B2 price addition of \$4.60 or \$41.60 total.							
	SELECT BASIC SWITCH		3' Cable		6' Cable		10' Cable		3' Cable		6' Cable		10' Cable					
			Contacts	Type	Price	Type	Price	Type	Price	Type	Base Price	Type	Base Price	Type	Base Price			
	Standard Box Plug-in	1 N.O. 1 N.C.	B54EC- RB1	\$33.	B54EC- RB2	\$35.	B54EC- RB3	\$50.	B54*- SB36	\$37.	B54*- SB72	\$39.	B54*- SB120	\$54.				
		2 N.O. 2 N.C.	B62EC- RB1	36.	B62EC- RB2	38.	B62EC- RB3	53.	B62*- SB36	40.	B62*- SB72	42.	B62*- SB120	57.				
		2 N.O. 2 N.C. Two Stage	B66EC- RB1	39.	B66EC- RB2	41.	B66EC- RB3	58.	B66*- SB36	43.	B66*- SB72	45.	B66*- SB120	60.				
	Standard Box Non- Plug-in	1 N.O. 1 N.C.	B53EC- RB1	33.	B53EC- RB2	35.	B53EC- RB3	50.	B53*- SB36	37.	B53*- SB72	39.	B53*- SB120	54.				
		1 N.O. Contactless	B55EC- RB1	48.	B55EC- RB2	60.	B55EC- RB3	66.	B55*- SB36	52.	B55*- SB72	54.	B55*- SB120	69.				
		1 N.C. Contactless	B57EC- RB1	40.	B57EC- RB2	50.	B57EC- RB3	65.	B57*- SB36	52.	B57*- SB72	54.	B57*- SB120	69.				
		2 N.O. 2 N.C.	B61EC- RB1	36.	B61EC- RB2	38.	B61EC- RB3	63.	B61*- SB36	40.	B61*- SB72	42.	B61*- SB120	57.				
		2 N.O. 2 N.C. Two Stage	B65EC- RB1	39.	B65EC- RB2	41.	B65EC- RB3	66.	B65*- SB36	43.	B65*- SB72	45.	B65*- SB120	60.				
	Compact Box Plug-in	1 N.O. 1 N.C.	B52EC- RB1	33.	B52EC- RB2	35.	B52EC- RB3	50.	B52*- SB36	37.	B52*- SB72	39.	B52*- SB120	54.				
	Compact Box Non- Plug-in	1 N.O. 1 N.C.	B51EC- RB1	33.	B51EC- RB2	35.	B51EC- RB3	50.	B51*- SB36	37.	B51*- SB72	39.	B51*- SB120	54.				
 Nominal Operating Data			Pre-travel, .....		.11"											
			Pre-travel Two Stage	Top Switch	.11"													
				Bottom Switch	.01" after top switch (Field adjustable from .00" to .01")													
			Total-travel, .....		.25"											
			Differential, .....		.05"											
			Operating Force	1 Pole	8 lbs. max. (at 270° bend)													
2 Pole	9 lbs. max. (at 270° bend)																	
Replacement open type Plug-in limit switches			The basic switch and turret head but less box and plug-in receptacle can be ordered by substituting the letters "BO" for the first "B" in the type number and deducting \$2. Example: Open type replacement for Type B54EC-RB1 is Type BO54EC-RB1, \$31, each.															
Box and plug-in receptacle only			Standard 1 N.O.-1 N.C. Part No. 31032-099-50, \$2.00 Standard 2 N.O.-2 N.C. Part No. 31032-100-50, 2.00 Compact 1 N.O.-1 N.C. Part No. 31032-098-50, 2.00															



LIMIT SWITCHES—TYPE B

HEAVY DUTY PRECISION TURRET HEAD TYPE — SPECIAL FEATURES

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TABLE 1F — SPECIAL FEATURES (Do not apply to Types BB, BF or BR unless noted)








	Special Features	Form	Price Addition
	NEON PILOT LIGHT, 120 VOLTS AC or DC on PLUG-IN TYPE SWITCH (Type B52, B54, B62, B64 or B66): Addition of neon pilot light in parallel with N.O. contact (light normally on). Addition of neon pilot light in parallel with N.C. contact (light normally off). Addition of two neon pilot lights, one in parallel with N.O. contact (light normally on), one in parallel with N.C. contact (light normally off). Addition of two neon pilot lights in parallel with N.O. contacts (lights normally on). Addition of two neon pilot lights in parallel with N.C. contacts (lights normally off).	P5 P6 P7 P8 P9	\$ 3.00 3.00 7.50 7.50 7.50
	PRE-WIRED RECEPTACLE: Limit switch furnished with prewired four conductor Joy receptacle No. X8653-13 (specify wiring on order): For use with Joy female plug No. X8653-12 or X8653-44	Y3	7.50
	POTTED LIMIT SWITCH (specify wiring connections on order): Limit switch pre-wired with four #14 wires 5 feet long and conduit hole sealed with Epoxy Resin. CONDUIT SEAL ONLY: Conduit seal fits in conduit entrance and excludes liquids. Part No. 2441-D87-X1, \$0.15 each.	Y62	6.00
	MANIFOLD MOUNTING: Box is furnished with a wiring hole and a gasket on the base. Available on all Type B boxes except plug-in compact boxes (Type B52) and two pole plug-in standard boxes (Types B62, B64, B66)	Y94	2.00
	DUST BOOT: Lever type limit switch furnished with a boot around the shaft to protect against abrasive dusts, dirt, grit and sand. Available on all Types B, BB and BR lever type switches. DUST BOOT ONLY: Can be added in the field to any Type B, BB and BR lever type switch Class 9007 Type BT-3, \$1. each.	Y33	1.00
	GROUND TERMINAL: Limit switch furnished with a terminal grounded to switch enclosure. Available on standard box non-plug-in (Type B53) and plug-in (Type B54) only. GROUND TERMINAL KIT ONLY: Kit includes terminal and necessary screws to install in any Type B53 limit switch. Class 9007 Type BT-2, \$2.00 each. Minimum order quantity 10. Must be ordered in multiples of 10.	Y51	2.00
	LOW TEMPERATURE LEVER TYPE LIMIT SWITCH (Types B — A, B — B, B — N): Limit switch will operate in an ambient temperature range of —20° F to 185° F (Standard limit switch ambient temperature range is 0° F to 185° F). Minimum temperature is based on the absence of freezing moisture or water.	Y128	2.00

TABLE 1H — ADAPTOR PLATE KIT


	Adaptor plate permits the direct substitution of any Type B limit switch with standard box for any Type T limit switch with Style B base plate.	
	Switch With Adaptor Plate Form	Price Addition
	Y147	\$2.
	Adaptor Plate Kit only. Kit includes adaptor plate plus necessary mounting screws.	Price
Type B53B Form Y147	BT-1	\$1.

TABLE 1G — MUSHROOM BUTTON FOR PALM OPERATED TURRET HEAD

Color	1 3/8" Dia. Button Type No.	2 1/4" Dia. Button Type No.	Price
Black	NB-1	PB-1	\$ 3.
Red	NB-2	PB-2	3.
Green	NB-3	PB-3	3.
Brown	NB-4	PB-4	3.
Yellow	NB-5	PB-5	3.
Orange	NB-6	PB-6	3.
Blue	NB-7	PB-7	3.



LIMIT SWITCHES—TYPE BR

HAZARDOUS LOCATION TURRET HEAD TYPE — SINGLE POLE & TWO POLE

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NEMA TYPE 7, CLASS I, GROUPS B, C AND D
NEMA TYPE 9, CLASS II, GROUPS E, F AND G ENCLOSURE, NON-PLUG-IN

TABLE 1J — LEVER ARM TYPE — WITHOUT LEVER ARM (Select Lever Arm From Page 181, Table 1B).





Contacts Nominal Operating Data	 Standard Pre-Travel Lever Arm Type Spring Return Direction of Operation Convertible				 Low Differential Lever Arm Type Spring Return Direction of Operation Convertible				 Light Operating Torque Lever Type Spring Return Direction of Operation Convertible				 Maintained Contact Lever Type	
	Type No. of Complete Switch				Type No. of Complete Switch				Type No. of Complete Switch				Type	
	Standard CW & CCW	CW Only	CCW Only	Price	Standard CW & CCW	CW Only	CCW Only	Price	Standard CW & CCW	CW Only	CCW Only	Price	CW & CCW	Price
1 N.O.-1 N.C.	BR53B2	BR53B	BR53B1	\$26.50	BR53A2	BR53A	BR53A1	\$27.50	BR53N2	BR53N	BR53N1	\$29.50	BR53C	\$29.50
2 N.O.-2 N.C.	BR61B2	BR61B	BR61B1	29.50	BR61A2	BR61A	BR61A1	30.50					BR61C	32.50
2 N.O.-2 N.C. Neutral Position	BR63B2			34.50	BR63A2			35.50						
2 N.O.-2 N.C. Two Stage *	BR65B2	BR65B	BR65B1	32.50	BR65A2	BR65A	BR65A1	33.50						
Pre-travel . .	5°				5°				15°				50°	
Total-travel . . .	90°				90°				90°				90°	
Differential	4°				2°				6°				10°	
Operating Torque	1 Pole	4½ lb.-in.			4½ lb.-in.			11 oz.-in.			3 lb.-in.			
	2 Pole	5 lb.-in.			5 lb.-in.						3½ lb.-in.			

TABLE 1K — PLUNGER TYPE AND AIR OPERATED TYPE












Contacts Nominal Operating Data			Top Roller Plunger Spring Return		Side Roller Plunger Spring Return		Top Push Rod Plunger Spring Return		Side Push Rod Plunger Spring Return		Side Push Rod Plunger Maintained Contact		Air Operated	
		Type	Price	Type	Price	Type	Price	Type	Price	Type	Price	Price	Price	
1 N.O.-1 N.C.		BR53D	\$29.	BR53F	\$31.	BR53E	\$28.	BR53G	\$29.	BR53H	\$32.	BR53P	\$38.	
2 N.O.-2 N.C.		BR61D	32.	BR61F	33.	BR61E	31.	BR61G	32.	BR61H	35.	BR61P	41.	
2 N.O.-2 N.C. Two Stage *		BR65D	35.	BR65F	36.	BR65E	34.	BR65G	35.			BR65P	44.	
Pre-travel.....		.08"		.08"		.08"		.08"		14"		Trip Pressure 1 Pole—25 p.s.i. ± 25% 2 Pole—50 p.s.i. ± 25%		
Total-travel.....		.25"		.25"		.25"		.25"		.25"		Differential		
Differential.....		.03"		.03"		.03"		.03"		.03"		1 Pole—10-20 p.s.i. 2 Pole—20-40 p.s.i.		
Operating Force	1 Pole	3 lbs.		2½ lbs.		3 lbs.		2½ lbs.		6 lbs.		Max. Surge Press.—100 p.s.i.		
	2 Pole	4 lbs.		3 lbs.		4 lbs.		3 lbs.		7 lbs.				

TABLE 1L — WOBBLE STICK, CAT WHISKER, REMOTE CABLE AND PALM OPERATED TYPES

Contacts Nominal Operating Data	 Wobble Stick DELRIN Ex- tension		 Wobble Stick Wire Ex- tension		 Cat Whisker		 Remote Cable Operated Total number of degrees bend maximum — 270°. Minimum bend radius — 5".				 Palm Operated	
	Type	Price	Type	Price	Type	Price	3' Cable		6' Cable		Type	Price
							Type	Price	Type	Price		
1 N.O.-1 N.C.	BR53J	\$28.	BR53K	\$28.	BR53L	\$24.	BR53EC-RB	\$45.	BR53EC-RB2	\$47.	BR53R+	\$28.
2 N.O.-2 N.C.	BR61J	31.	BR61K	31.	BR61L	27.	BR61EC-RB	48.	BR61EC-RB2	50.	BR61R+	31.
2 N.O.-2 N.C. Two Stage *	BR65J	34.	BR65K	34.	BR65L	30.	BR65EC-RB	51.	BR65EC-RB2	53.	BR65R+	34.
Pre-travel	10°		10°		20°		¾"		¾"		¾"	
Total-travel	90°		90°		90°		¼"		¼"		¼"	
Differential	5°		5°		10°		¾"		¾"		¾"	
Operating Force or Torque	1 Pole	3 lb.-in.	3 lb. in.		7 oz. in.		8 lbs. max. (at 270° total bend)				3 lbs.	
	2 Pole	3½ lb.-in.	3½ lb.-in.		10 oz. in.		9 lbs. max. (at 270° total bend)				4 lbs.	

*See pages 180, 182, 183 and 184 for pre-travel of two stage devices under corresponding turret head listing.

†Price does not include mushroom button. Type number must be completed by adding proper button number from Table 1G on page 185, and button price added to above price. Example: BR53R with Type NB-2, \$28. plus \$3. or \$31. list total.

▲Registered trademark of DuPont.



TYPE BB & BF—LIMIT SWITCHES

TYPE BF FLUSH MOUNTING LIMIT SWITCHES

Oil-Tight, Water-tight, Dust-tight and Drip-tight Enclosure — NEMA Types 2, 4, and 13

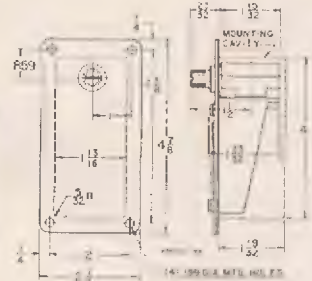
CLASS
9007

TABLE 1M — LEVER ARM TYPE — Without Lever (Select lever arms from Page 181, Table 1B).

SELECT BASIC SWITCH ▼	SELECT TURRET HEAD†	Standard Pre-Travel— Lever Arm Type Spring Return					Low Differential— Lever Arm Type Spring Return					Light Operating Torque— Lever Arm Type Spring Return					Maintained Contact Lever Type		
		Direction of Operation Convertible					Direction of Operation Convertible					Direction of Operation Convertible					Type No. of Complete Switch		
		Type No. of Complete Switch					Type No. of Complete Switch					Type No. of Complete Switch					Type No. of Complete Switch		
		Stand- ard CW & CCW	CW Only	CCW Only	Price	Stand- ard CW & CCW	CW Only	CCW Only	Price	Stand- ard CW & CCW	CW Only	CCW Only	Price	Stand- ard CW & CCW	CW Only	CCW Only	Price	CW & CCW	Price
Compact	1 N.O.-1 N.C.	BF51B2	BF51B	BF51B1	\$13.50	BF51A2	BF51A	BF51A1	\$14.50	BF51N2	BF51N	BF51N1	\$16.50	BF51C					
	1 N.O.-1 N.C.	BF53B2	BF53B	BF53B1	13.50	BF53A2	BF53A	BF53A1	14.50	BF53N2	BF53N	BF53N1	16.50	BF53C					
Standard	1 N.O.-2 N.C.	BF61B2	BF61B	BF61B1	18.50	BF61A2	BF61A	BF61A1	17.50										
	2 N.O.-2 N.C. Neutral Position	BF63B2			17.50	BF63A2			18.50										
	2 N.O.-2 N.C. Two Stage	BF65B2	BF65B	BF65B1	19.50	BF65A2	BF65A	BF65A1	20.50										



Type BF53B



Lever Type, Standard Flush Plate. For compact switch, subtract $\frac{3}{8}$ " from vertical overall and mounting dimensions above.

TABLE 1N — PLUNGER TYPE

SELECT BASIC SWITCH ▼	SELECT TURRET HEAD†	Side Roller Plunger— Spring Return		Side Push Rod Plunger— Spring Return		Side Push Rod Plunger— Maintained Contact	
		Type	Price	Type	Price	Type	Price
Compact	1 N.O.-1 N.C.	BF51F	\$ 18.	BF51G	\$ 16.	BF51H	\$ 19.
	1 N.O.-1 N.C.	BF53F	18.	BF53G	16.	BF53H	19.
Standard	2 N.O.-2 N.C.	BF61F	21.	BF61G	19.	BF61H	22.
	2 N.O.-2 N.C. Two Stage	BF65F	24.	BF65G	22.		

†For operating data of limit switches, refer to pages 180-184 under corresponding turret heads.

TYPE BB MULTIPLE UNIT LIMIT SWITCHES

Oil-tight, Water-tight, Dust-tight and Drip-tight Enclosure — NEMA Types 2, 4, and 13

TABLE 1P — STANDARD FACTORY ASSEMBLED LIMIT SWITCHES

SELECT LIMIT SWITCH TYPE All Units Identical†	SPDT Lever Arm Type Standard Pre-Travel Without Lever Arms				2PDT Lever Arm Type Standard Pre-Travel Without Lever Arms				SPDT Top Roller Plunger B53D		SPDT Top Push Rod Plunger B53E	
	CW Only B53B		CW & CCW B53B2		CW Only B61B		CW & CCW B61B2		Type	Price	Type	Price
	Type	Price	Type	Price	Type	Price	Type	Price				
2	BB203	\$ 33.00	BB205	\$ 33.00	BB215	\$ 39.00	BB216	\$ 39.00	BB206	\$ 39.00	BB207	\$ 36.00
3	BB303	49.50	BB305	49.50	BB315	58.50	BB316	58.50	BB306	57.00	BB307	54.00
4	BB403	66.00	BB405	66.00	BB415	78.00	BB416	78.00	BB406	76.00	BB407	72.00
5	BB503	82.50	BB505	82.50	BB515	97.50	BB516	97.50	BB506	95.00	BB507	90.00

†For operating data of limit switches, refer to pages 180-184 under corresponding turret heads.

CUSTOM BUILT FACTORY ASSEMBLED LIMIT SWITCHES

TABLE 1Q — BASE PRICES

No. of Units	Type	Base Price
2	BB-20	\$ 4.
3	BB-30	6.
4	BB-40	8.
5	BB-50	10.

C. Pricing:

1—Type BB-20	\$ 4.00
1—Type B53B	14.50
1—Type B61B	17.50
Total	\$36.00
2—Type MA11	3.00

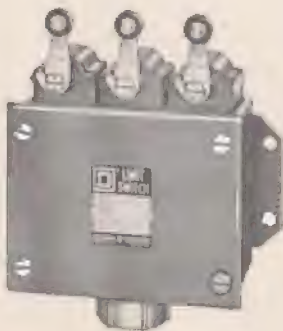
In addition to the standard multiple unit limit switches listed above, many other factory assembled devices are available.

Pricing and ordering of custom built devices.

1. Obtain base price for enclosure from Table 1Q.
2. Add price of all limit switches to be installed. Select limit switches from pages 180-184, using the standard box, non-plug-in type numbers.
3. Price any lever arms required from page 181.
4. To order, specify class and type number from Table 1Q and list limit switches to be installed from left to right in desired order.

Example:

- A. 1—Class 9007 Type BB-20 with the following units:
Unit No. 1 — Type B53B, Unit 2 — Type B61B
- B. 2—Class 9007 Type MA11 lever arms.



Type BB303 with
Type MA11 Lever Arms



LIMIT SWITCHES

GENERAL DATA & DIMENSIONS

CLASS
9007

DIMENSIONS — TYPE B

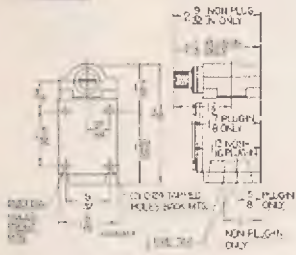


Fig. 1 — Lever Type,
1 Pole
Plug-in or Non-Plug-in
Compact Box

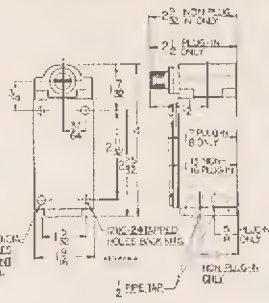


Fig. 2 — Lever Type,
1 Pole or 2 Pole
Plug-in or Non-Plug-in
Standard Box

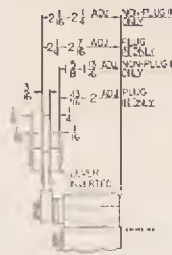


Fig. 3 — Cam
Track Data
Lever Type, with
Types AA, BA,
CA, DA, EA, LA
and MA Arms

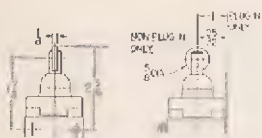


Fig. 4 — Top Roller
Plunger Turret Head

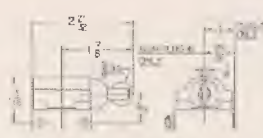


Fig. 5 — Side Roller
Plunger Turret Head



Fig. 6 — Top Push Rod
Plunger Turret Head

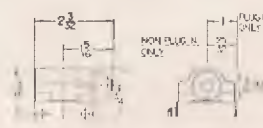


Fig. 7 — Side Push Rod
Plunger Turret Head

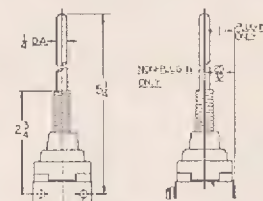


Fig. 8 — Wobble Stick
DELRIN Extension Turret Head

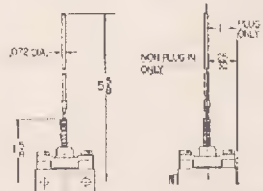
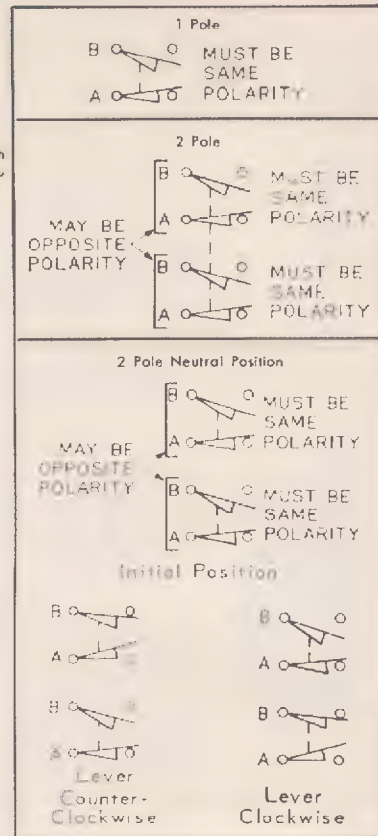


Fig. 9 — Cat Whisker
Turret Head

WIRING DIAGRAMS — TYPE B



ELECTRICAL CONTACT RATINGS — TYPES B, T, FT, A and C

Switch Type	Contacts	Volts	AC						Volts	DC			
			Inductive Pilot Duty 35% Power Factor							Resistive 75% Power Factor	Inductive Pilot Duty and Resistive		
			Make		Break		Con- tinuous Carrying Amperes	Make, Break and Continuous Carrying Amperes		Make and Break Amperes		Con- tinuous Carrying Amperes	
			Amps.	VA	Amps.	VA				Single Throw	Double Throw		
B	SPDT, DPDT	120 240 480 600	60 30 15 12	7200 7200 7200 7200	6 3 1.5 1.2	720 720 720 720	10 10 10 10	10 10 10 10	120 240 480 600	0.5 0.25 0.05	0.25 0.1	10 10 10 10	
AW, AO-2 and AO-8, AB, AP and AS	SPDT	110 220 440 600	40 20 10 8		15 10 6 5		15 15 15 15	15 15 15 15	115 230 460 600	2.0 0.5 0.1	0.5 0.2 0.02	15 15 15 15	
AW, CO-3 and CO-6, CB, CC, CP and CS	DPDT, DPST	115 230 460 575	30 15 7.5 6	3450 3450 3450 3450	3 1.5 0.75 0.6	345 345 345 345	10 10 10 10	10 10 10 10	115 230 460 600	1.0 0.3 0.1	0.2 0.1	10 10 10 10	
AO-1, AC	SPDT	110 220 440 600	40 20 10 8		15 10 6 5		15 15 15 15	15 15 15 15	115 230 460 600	0.5 0.25 0.05	0.25 0.1	15 15 15 15	
T and FT	SPDT Quick Make and Break	120 240 480 600	150 75 37.5 30	18,000 18,000 18,000 18,000	25 12.5 6.25 5	3000 3000 3000 3000	25 25 25 25	25 25 25 25	120 230 460 600	5.0 0 0.2		25 25 25 25	
		Three Point Double Throw Quick Make and Break	120 240 480 600	50 25 12.5 10	6000 6000 6000 6000	15 7.5 3.75 3	1800 1800 1800 1800	25 25 25 25	25 25 25 25				
			All Slow Make and Break	120 240 480 600	60 30 15 12	7200 7200 7200 7200	6 3 1.5 1.2	720 720 720 720	25 25 25 25	10 10 10 10	25 25 25 25		













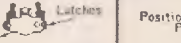
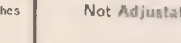



TYPE T & FT—LIMIT SWITCHES

HEAVY DUTY TYPE AND FOUNDRY TYPE
OIL-TIGHT, WATER-TIGHT, DUST-TIGHT AND DRIP-TIGHT ENCLOSURE — NEMA TYPES 2, 4, AND 13

CLASS
9007

TABLE 3A — TYPE T HEAVY DUTY SWITCH (Complete with Base Plate Without Lever Arm) — See page 188 for contact ratings.

SELECT OPERATING SEQUENCE SELECT BASIC SWITCH		UNIVERSAL								STANDARD	
		No. 1		No. 4		No. 5		No. 12		No. 1	
		Single Pole Double Throw Spring Return CW Operation Only		Single Pole Double Throw Spring Return Neutral Position		Single Pole Double Throw Spring Return CCW Operation Only		Single Pole Double Throw Maintained Contact (Types X, Y or Z Lever Arms Recommended)		Single Pole Double Throw Spring Return CW & CCW Operation	
		Initial Position and Counter-clockwise		Initial Position		Initial Position and Clockwise		Counter-clockwise		Initial Position	
											
		Clockwise		Counter Clockwise Clockwise		Counter-clockwise		Clockwise		Clockwise and Counter-clockwise	
											
		Type	Price	Type	Price	Type	Price	Type	Price	Type	Price
Surface Mounting	A	TUA1	\$20.00	TUA4	\$20.00	TUA5	\$20.00	TUA12	\$20.00	TSA1	\$20.00
	B	TUB1	20.00	TUB4	20.00	TUB5	20.00	TUB12	20.00	TSB1	20.00
	C	TUC1	20.00	TUC4	20.00	TUC5	20.00	TUC12	20.00	TSC1	20.00
	D	TUD1	20.00	TUD4	20.00	TUD5	20.00	TUD12	20.00	TSD1	20.00
	E	TUE1	21.00	TUE4	21.00	TUE5	21.00			TSE1	21.00
	F	TUF1	21.00	TUF4	21.00	TUF5	21.00			TSF1	21.00
	G	TUG1	21.00	TUG4	21.00	TUG5	21.00			TSG1	21.00
Flush Mounting	H	TAR1	29.50	TAR4	29.50	TAR5	29.50	TAR12	29.50	TBR1	29.50
	S	TAS1	26.00	TAS4	26.00	TAS5	26.00	TAS12	26.00	TBS1	26.00
Nominal Operating Data	Pre-travel†	14°		6°		14°		45°		14°	
	Total-travel	88°		81°		88°		90°		89°	
	Differential	12°		5°		12°		0°		12°	
	Operating Torque	10 lb.-in.		10 lb.-in.		10 lb.-in.		8 lb.-in.		9 lb.-in.	
Repeat Accuracy♦		±.004°		±.004°		±.004°		±.004°		±.004°	
To convert sequences remove base plate, pos. plate and latches. Reassemble pos. plate and latches as shown.								Not Adjustable			

†Pre-travel listed may vary up to 5° additional for universal switches or up to 2° additional for standard switches due to free travel of lever arm at initial position.
♦Linear travel of cam on 1½" lever arm.

TABLE 3B — LEVER ARMS FOR TYPES T AND FT LIMIT SWITCHES

Description				Type			Price	Description				Type			Price	
Type of Arm	Length of Arm	Roller Position	Roller Width	¾" Dia. Roller	1" Dia. Roller	1½" Dia. Roller		Type of Arm	Length of Arm	Roller Position	Roller Width	¾" Dia. Roller	1" Dia. Roller	1½" Dia. Roller		
Straight	1½	Optional	¼	B1	B2	B3	\$2.	90° Forked	1½	Rollers on Same Side	¼	X1	X2	\$ 7.00		
	1½	Optional	½	B12	B13	B14	2.		1½	RH Roller on Opp. Side	¼	Y1	Y2	7.00		
	2½	Optional	¼	B7	B8	B9	3.			LH Roller on Opp. Side	¼	Z1	Z2	7.00		
	2½	Optional	½	B22	B23	B24	3.			Options	¼	R 8†	R19†	R20†	3.00	
	2½	None	None	Without Roller B21			3.		3/16" Rod (not furnished)	None		R15		4.00		
Offset	5	Optional	¼	B19			3.	Rod	Adj.†	¼" Key Stock (not furnished)	None		R17	4.00		
	1½	Inside Offset	¼	C1	C2	C3	3.		Adj.†	1/8" Key Stock (not furnished)	None		R16	8.00		
	1½	Outside Offset	¼	D1	D2	D3	3.		1½	Center	¾		G1	1.00		
	1½	Outside Offset	¼	E4	E5	E6	2.		3½	None	None					
	1½	Inside Offset	¼	F4	F5	F6	2.		1-Way Roller	1½	Outside Offset	¼		D4	10.00	
120° Forked	1½	Rollers on Same Side	¼	J1	J2		7.	Conveyor Side Guide, 8½" long with 1½" dia. 3/8" Delrin roller.							R21	9.50
	1½	LH Roller on Opp. Side	¼	K1	K2		7.	Cable operated — 2½" long with eyebolt (¾" I.D.) instead of roller							B27	3.00
	1½	RH Roller on Opp. Side	¼	N1	N2		7.									

OIL-TIGHT, WATER-TIGHT, DUST-TIGHT AND DRIP-TIGHT ENCLOSURE — NEMA TYPES 2, 4 AND 13

TABLE 3C — TYPE FT FOUNDRY SWITCH (Complete with Base Plate Without Lever Arm) — See page 188 for contact ratings.







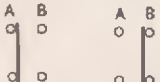









Base Plato
A
B
C

Surface Mounting

[illegible]

To convert sequences remove base plate, pos. plate and latches. Reassemble pos. plate and latches as shown.

UNIVERSAL								STANDARD	
No. 1		No. 4		No. 5		No. 12		No. 1	
Single Pole Double Throw Spring Return CW Operation Only		Single Pole Double Throw Spring Return Neutral Position		Single Pole Double Throw Spring Return CCW Operation Only		Single Pole Double Throw Maintained Contact (Types X, Y or Z Lever Arms Recommended)		Single Pole Double Throw Spring Return CW & CCW Operation	
Initial Position and Counter-clockwise		Initial Position		Initial Position and Clockwise		Counter-clockwise		Initial Position	
									
Clockwise		Counter Clockwise Clockwise		Counter-clockwise		Clockwise		Clockwise and Counter-clockwise	
									
Type	Price	Type	Price	Type	Price	Type	Price	Type	Price
FTUA1	\$28.	FTUA4	\$28.	FTUA5	\$28.	FTUA12	\$28.	FTSA1	\$28.
FTUB1	28.	FTUB4	28.	FTUB5	28.	FTUB12	28.	FTSB1	28.
FTUC1	28.	FTUC4	28.	FTUC5	28.	FTUC12	28.	FTSC1	28.
FTUD1	28.	FTUD4	28.	FTUD5	28.	FTUD12	28.	FTSD1	28.
14°		5°		4°		45°		14°	
88°		81°		88°		90°		89°	
12°		5°		12°		0°		12°	
10 lb.-in.		10 lb.-in.		10 lb.-in.		8 lb.-in.		9 lb.-in.	
±.004"		±.004"		±.004"		±.004"		±.004"	
Positioning Plate 	Latches	Positioning Plate 	Latches	Positioning Plate 	Latches	Not Adjustable		Positioning Plate 	Latches

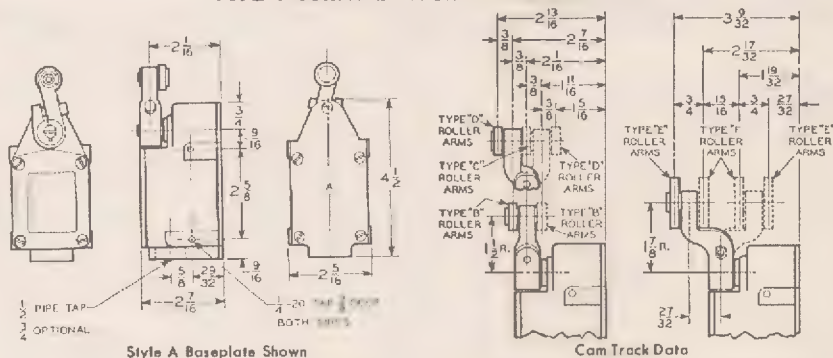
‡Pre-travel listed may vary up to 5° additional for universal switches or up to 2° additional for standard switches due to free travel of lever arm at initial position.
♦Linear travel of cam on 1½" lever arm.

TYPE T SURFACE MOUNTED DIMENSIONS

TABLE 3D—SEPARATE BASE PLATES

Style	Mounting Holes	Part Number	Price
A	None	2934-D32-G1	\$ 1.
B	End	2934-D14-G1	1.
C	Side	2934-D33-G1	1.
D	End *	2934-D34-G1	1.
E	End	2934-D14-G2 ▲	2.
F	Side	2934-D33-G2 ▲	2.
G	End *	2934-D34-G2 ▲	2.

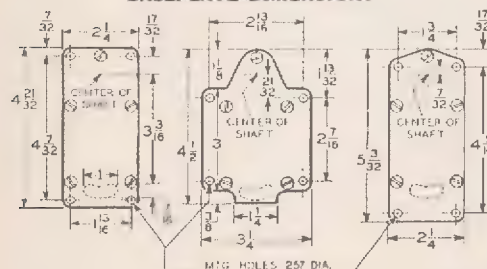
* Mounting hole dimensions correspond to those of Class 9007 Type M limit switches.
 † No mounting holes in base plate. Side mounting holes in switch case must be used.
 ‡ Base plate with manifold.



Style A Baseplate Shown

Cam Track Data

BASEPLATE DIMENSIONS

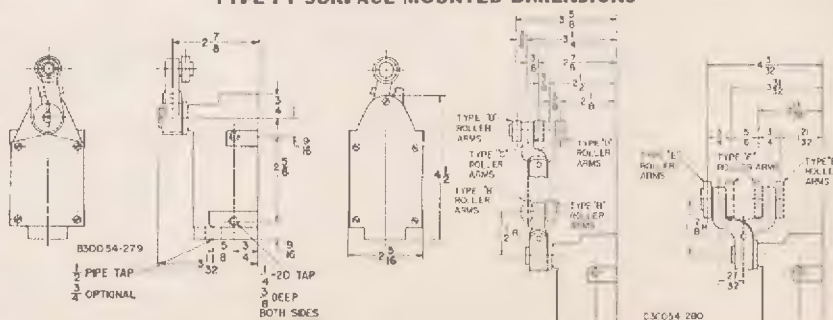


Style "B"
{Style "E" with
Manifold
Opening}

Style "C"
(Style "F" w/
Manifold
Opening)

Style "D"
(Style "G" with
Manifold
Opening)

TYPE FT SURFACE MOUNTED DIMENSIONS



Style A Basaplate Shown

Cam Track Date



TYPE AW—LIMIT SWITCHES

PRECISION TYPE

OIL-TIGHT, WATER-TIGHT, DUST-TIGHT AND DRIP-TIGHT ENCLOSURE — NEMA TYPES 2, 4, AND 13

CLASS
9007

TABLE 2A — LEVER ARM AND PLUNGER TYPES — (For ratings see page 188).

SELECT SWITCH	SELECT OPERATOR	Lever Arm Type (Without Lever Arm, Select from Page 181, Table 1B) CCW Operation		Roller Plunger Type With Micrometer Adjustment		Push Rod Plunger Type With Micrometer Adjustment	
		Type	Price	Type	Price	Type	Price
Mounting	Contacts						
	1 N.O.-1 N.C.	AW-16	\$14.50	AW-36	\$17.00	AW-46	\$18.00
Surface Mounting Plug-in	2 N.O.	AW-17	17.50	AW-37	20.00	AW-47	19.00
	2 N.C.	AW-19	17.50				
Surface Mounting Non-Plug-in Standard Box	1 N.O.-1 N.C.	AW-12	14.50	AW-32	17.00	AW-42	16.00
	1 N.O.-1 N.C.	AW-14	14.50	AW-34	17.00	AW-44	16.00
Surface Mounting Non-Plug-in Deep Box	2 N.O.-2 N.C.	AW-18	17.50	AW-38	20.00	AW-48	19.00
		AW-20 (Duplex Box)	23.50				
Open Type (Without Box) Plug-in	1 N.O.-1 N.C.	AO-16	12.50	AO-36	15.00	AO-46	14.00
	2 N.O.	AO-17	15.50	AO-37	18.00	AO-47	17.00
Open Type (Without Box) Non-Plug-in	2 N.C.	AO-19	15.50				
	1 N.O.-1 N.C.	AO-12	12.50	AO-32	15.00	AO-42	14.00
Flush Mounting	2 N.O.-2 N.C.	AO-18	15.50	AO-38	18.00	AO-48	17.00
	1 N.O.-1 N.C.	AF-12	13.50	AF-32	16.00	AF-42	15.00
Duplex Surface Mounting	2 N.O.-2 N.C.	AF-18	16.50	AF-38	19.00	AF-48	18.00
	1 N.O.-1 N.C.	AAW-1	36.00			AAW-5	36.00
Duplex Flush Mounting	2 N.O.-2 N.C.	AAW-4	39.00				
	1 N.O.-1 N.C.	AAF-1	31.00			AAF-5	31.00
Nominal Operating Data	Pro-travel	5°		1/4" + 1/8" Adjustment		1/4" + 1/8" Adjustment	
	Total-travel	30°		1/4"		1/4"	
	Differential	5°		1/4"		1/4"	
	Reverse Over-travel	25°		1/4"		1/4"	
	Operating Torque	2 3/4 lb.-in.		3 lbs.		3 lbs.	
	Repeat Accuracy	±.001°		±.001°		±.001°	
		Linear travel of cam on 1 3/8" lever arm		±.001"		±.001"	

1 2 N.O. contacts only when Type AW-19 or AO-19 is operated in clockwise direction. 2 N.C. contacts only when Type AW-19 or AO-19 is operated in counterclockwise direction.
‡Includes two Type BA-1 lever arms.

PRECISION SNAP SWITCHES

CLASS
9007

PRECISION SNAP SWITCHES AND LIMIT SWITCHES WITHOUT ENCLOSURES

(For ratings see page 188).

QUICK MAKE AND BREAK

600 VOLTS MAX. AC AND DC

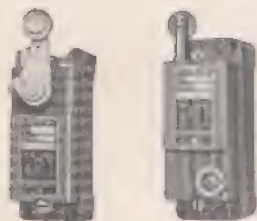
Type of Operator	Contact Arrangement	Type	Price	Type of Operator	Contact Arrangement	Type	Price
None (Basic snap switch)	1 N.O. 1 N.C.	AO-1 ★	\$ 2.90	Cabinet Door Type	1 N.O. 1 N.C.	AC-1	5.50
	1 N.O. 1 N.C.	AO-2 ★	2.90		2 N.O. 2 N.C.	CC-1	8.50
	2 N.O. 2 N.C.	AO-6 (Plug-in)	2.90		1 N.O. 1 N.C.	AS-221	4.75
	2 N.O. 2 N.C.	CO-3	5.80	Button Seal Type	2 N.O. 2 N.C.	CS-221	7.75
	2 N.O. 2 N.C.	CO-6 (Plug-in)	5.80		1 N.O. 1 N.C.	AP-221	6.65
	Two Stage 2 N.O. 2 N.C.	CO-7	7.00		2 N.O. 2 N.C.	CP-221	9.55
Rigid Roller Lever Type	1 N.O. 1 N.C.	AB-21 (RH)	4.65	Roller Plunger Type Panel Mounting Non-Oiltight	1 N.O. 1 N.C.	AP-321	8.00
	1 N.O. 1 N.C.	AB-22 (LH)	4.65		2 N.O. 2 N.C.	AP-324†	8.00
	2 N.O. 2 N.C.	AB-41 (w/o side mtg. bracket)	4.65		2 N.O. 2 N.C.	CP-321	11.00
	2 N.O. 2 N.C.	CB-31 (RH)	7.55	Roller Plunger Type Panel Mounting Oil-tight	2 N.O. 2 N.C.	CP-324†	11.00
	2 N.O. 2 N.C.	CB-32 (LH)	7.55		1 N.O. 1 N.C.	AP-323	8.50
	2 N.O. 2 N.C.	CB-41 (w/o side mtg. bracket)	7.55		1 N.O. 1 N.C.	AP-325†	8.50
Rigid Roller Lever Type One-Way Roller	1 N.O. 1 N.C.	AB-25 (RH)	6.00	Mushroom Button Type Panel Mounting	2 N.O. 2 N.C.	CP-323	11.50
	1 N.O. 1 N.C.	AB-26 (LH)	6.00		2 N.O. 2 N.C.	CP-325†	11.50
	2 N.O. 2 N.C.	CB-35 (RH)	9.00		1 N.O. 1 N.C.	AP-222	7.40
	2 N.O. 2 N.C.	CB-36 (LH)	9.00		2 N.O. 2 N.C.	CP-222	10.40

★ Two pole circuits are electrically separated and can be used on opposite polarities. Contacts of each pole are single pole, double throw — circuits are electrically separate but cannot be used on opposite polarities.

† Standard Packaging Quantity — 50.

‡ Roller turned 90° from standard (perpendicular to mounting holes).

LIMIT SWITCHES



Lever Arm Type Plunger Type

LIMIT SWITCHES WITHOUT ENCLOSURES



Type AP-321



Type AB-21



LIMIT SWITCHES—PROXIMITY TYPE

CLASS
9007

In high speed industrial control systems, an extremely useful input device is the proximity limit switch which can detect the presence of any conducting metal object without making mechanical contact.

SELF-CONTAINED MODELS

Description	Input	Output▲	Type	Price
General Purpose Proximity	AC 120 V (±10%, -15%) 8 VA 25 to 400 Hertz	0-120 V. AC, .3 Amps. S.P.S.T. N.O. Reed Relay	VQ-1	\$69.
Limit Switch	DC 90-136 Volts, 55 Ma	Solid State N.O., 1 N.C.	PS-1	\$50.
Proximity Limit Switch for use with NORPAK	DC +20 Volts, 15 Ma			

▲AC pilot duty rating based on a 35% power factor.

APPROXIMATE DIMENSIONS

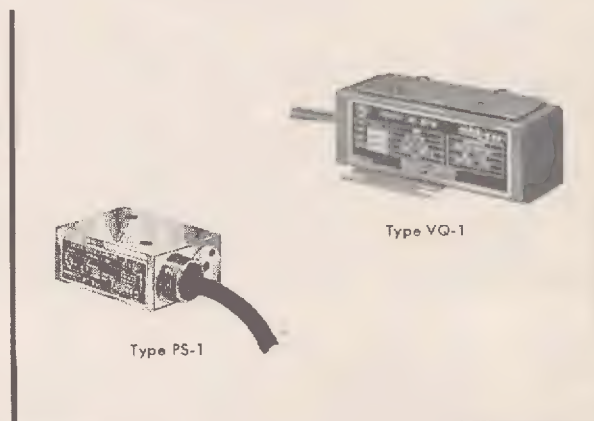
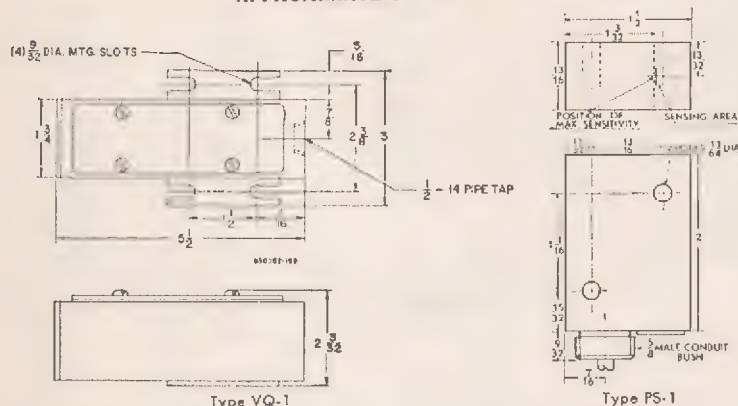


TABLE 1 — PROXIMITY PANEL

120 VOLTS

Application	Description				Output	Open Type		General Purpose Enclosure NEMA Type 1		Dust-tight Industrial Use Enclosure NEMA Type 12	
	Use With	Max. Sensitivity	Transducer Inputs	Function When Two Inputs are Used		Type	Price	Type	Price	Type	Price
Standard	V9	1/2"	1		10 Amp. Double Pole Double Throw Relay	QO-21	\$ 58.	QG-21	\$ 63.	QA-21	\$ 78.
For increased sensitivity with one transducer.	V9	1"	1 or 2	"OR"		QO-21-D1	92.	QG-21-D1	97.	QA-21-D1	112.
For "OR" function with two transducers.	V10	1/2"	1 or 2	"OR"							
For "AND" function with two transducers.	V9	3/4"	2	"AND"		QO-21-D2	107.	QG-21-D2	112.	QA-21-D2	127.
	V10	3/4"	2	"AND"							

TABLE 2 — TRANSDUCERS

Description	Max. Sensitivity	60 Hertz		50 Hertz	
		Type	Price	Type	Price
Standard pickup with 3 ft. of connecting leads	1"	V9	\$49.	V9-S1	\$59.
Small pickup with 3 ft. of connecting leads	1/2"	V10	43.	V10-S1	53.

TABLE 3 — CONVERSION ADAPTERS

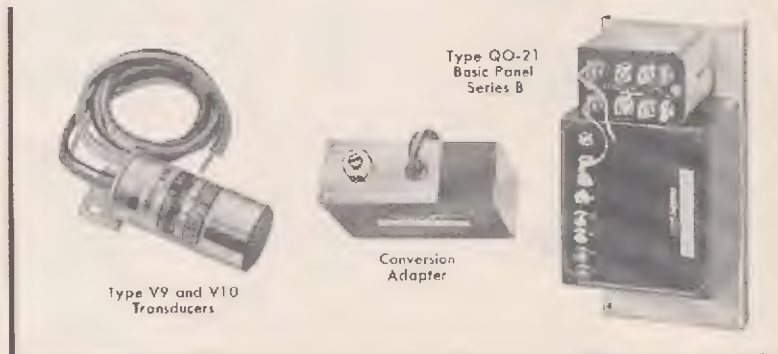
Description	Type	Price
Converts 9007 QO-21 to a QO-21-D1	QD-1	\$34.
Converts 9007 QO-21 to a QO-21-D2	QD-2	49.

TABLE 4 — OUTPUT RELAY CONTACT RATINGS*

Volts	AC Pilot Duty (Based on a 35% power factor)	
	Make	Break
0-115	60 Amps.	6 Amps.
115-277	6900 VA	690 VA

*AC continuous ampere rating is 10 amperes based on a 75% power factor

STANDARD MODELS



ORDERING INFORMATION REQUIRED

- Order complete proximity switches by listing panel class and type number from table 1 and transducer class and type number from table 2 as separate items.
- Order conversion adapters from table 3 by class and type number.
- Order self-contained proximity limit switch by class and type number.



PRESSURE SWITCHES

INDUSTRIAL PRESSURE SWITCHES

Industrial pressure switches cover requirements encountered in the control of pneumatic or hydraulic machines. Bellows actuated ACW switches can be used on systems employing air, water or oil. Piston operated ADW controls are limited to oil applications.

CLASS 9012

BELLOWS ACTUATED

QUICK MAKE AND BREAK

(1 N.O. — 1 N.C. CONTACT)

Application	Connection I.P.T.	Range	Differential	Max. Allow- able Pressure (P.S.I.)	Cast Aluminum Drip-tight and Oil Resistant, NEMA 12		NEMA 7 and 9, Class I-II Groups C-G Explosion Proof		
		Operating Point on Falling Pressure	Adds to Range For High Operating Point		Type	Price	Type	Price	Stock Settings
Machine Tool and Welder Switch	1/4"	1-10	1/2-5	30	ACW-3	\$30.80	ACW-3	\$70.90	5-5 1/2
		1-20	1-6	30	ACW-4	30.80	ACW-4	70.90	10-11
		1-75	4-15	100	ACW-5	28.60	ACW-5	68.70	40-44
		1-115	6-30	255	ACW-1	26.40	ACW-1	66.50	44-50
		20-180	10-30	255	ACW-8	26.40	ACW-8	66.50	90-100
		10-275	15-25	300	ACW-9	27.40	ACW-9	77.50	135-150
		10-300	25-125	600	ACW-2	26.80	ACW-2	75.30	155-180
		75-500	50-120	2000	ACW-6	52.80	ACW-6	92.90	300-350
		150-1000	85-145	2000	ACW-7	52.80	ACW-7	92.90	575-660
		350-1900	150-500	2500	ACW-10	52.80	ACW-10	92.90	1125-1275

PISTON ACTUATED

WITH STRAIN RELIEF

(1 N.O. — 1 N.C. CONTACT)

Application	Connection	Range	Differential	Max. Allowable Pressure (P.S.I.)	NEMA 12 Cast Aluminum Drip-tight and Oil Resistant Enclosure		NEMA 7 and 9 Cast Iron Class I-II Groups C-G Explosion Proof Enclosure		
		Operating Point on Rising Pressure	Subtracts from Range For Low Operating Point		Type	Price	Type	Price	Stock Settings
High Pressure Hydraulic Switch	1/2" I.P.T. Dryseal	135-1000	35-135	10000	ADW-3	\$52.80	ADR-3	\$92.90	535-570
		400-3000	100-400		ADW-4	\$2.80	ADR-4	\$2.90	1600-1700
		550-5000	125-400		ADW-7	\$2.80	ADR-7	\$2.90	2650-2775
	3/16"-18 UNF, 2B	2000-10000	400-1100	25000	ADW-8	\$73.90	ADR-8	\$114.00	5000-6000
		2000-15000	500-1200		ADW-9	\$73.90	ADR-9	\$114.00	8000-8500
		QUAD RING SEAL				DIFFERENTIAL INCREASES WITH RANGE			
3/8" I.P.T. Dryseal	135-1000	70-150	10000	ADW-5	\$3.80	ADR-5	\$3.90	475-570	
	400-3000	210-475		ADW-6	\$3.80	ADR-6	\$3.90	1390-1700	

Also available with 1 N.O.-2 N.C. Contacts. Consult Factory. Inflation diaphragm, ADW switches for use with synthetic hydraulic fluids harmful to standard BUNA N diaphragm. (Specify Form D1) (all except Types 5 and 6) \$2.00 additional. For Types 5 and 6 specify Form D2. Adjusting knob, specify Form K) \$3.00 additional. Surge Reducer — Type ADW Controls (specify 9049A25) with 3/4" female pipe tap (ADW-3, 4, 5, 6, 7 only). \$1.10 additional. Surge Reducer — Type ACW Controls (specify 9049A26) with 1/4" female pipe tap. \$8.00 additional. Time delay on pressure rise (.2 to 60 sec.) single pole types, specify Form E5. \$23.00 additional. Time delay on falling pressure (.2 to 60 sec.) single pole types, specify Form E6. \$23.00 additional. Water Tight, NEMA 4 Enclosure, ACW, ADW, Specify Form W1. \$3.50 additional.

ELECTRICAL RATINGS — AMPERES — DEVICES LISTED ON THIS PAGE

AC Pilot Duty			DC Pilot Duty		
Volts	Normal	Inrush	Volts	Single Throw	Double Throw
110	15	40	115	0.5	0.25
220	10	20	230	0.25	0.1
440	6	10	600	0.05	
600	5	8			

DUAL STAGE SWITCHES

BELLOWS ACTUATED

EACH STAGE:

SINGLE POLE — DOUBLE THROW

NEMA 12 Encl.	Price	Range Setting (P.S.I.) Limits of pressure between which Stage 1 can be adjusted to operate on rising pressure		Spread * (P.S.I.) Adjustable Add to range setting to obtain high operation point of Stage 2		Differential (P.S.I.) Non-Adjustable Subtract from high operation point of each stage to obtain low operation point		Max. Allow. Pressure (P.S.I.)
Type		Stage 1	Stage 2	Stage 2	Stage 2	Stage 1	Stage 2	
DCW-5	\$43.60	7-70	10-30			5	6	100
DCW-8	\$41.40	20-150	23-50			10	15	255

*Spread is the p.s.i. between the high operating point of each stage.

AIR LIMIT SWITCH

The Class 9012 Type AKW-1 is designed to make or break an electrical circuit when an object interrupts an air stream flowing between a nozzle and the pressure switch aperture.

CLASS 9012

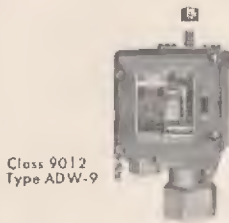
SINGLE POLE DOUBLE THROW

DIAPHRAGM ACTUATED

Maximum Operating Distance	Maximum Speed of Operation	Air Supply (Nozzle Pressure)	Gasketed Diecast, Drip-tight Oil Resistant Housing NEMA 12	
			Type	Price
5 Inches	800 O.P. V.	1 to 12 psi	AKW-1	\$38.55
5 Inches	500 O.P. V. *	1 to 12 psi	AKW-1 Form Z13	\$43.60

*Based on use of 6 feet of 1/4" O.D. plastic tubing. Max. speed of operation will decrease with increased tubing length and increase with shorter tube length. This refers to tubing used between aperture and switch proper. Form Z13 indicates the addition of a dirt trap which prevents foreign matter from entering the switch aperture. Plastic tubing is necessary between aperture and pressure switch when dirt trap is used.

ORDERING INFORMATION REQUIRED: Specify Class 9012, Type , and Give Pressure Settings.



Class 9012 Type ADW-9



Class 9012, Type ACW-1 Form K (Cover Removed)



Class 9012 Type ADW-3



Class 9049, Type A-25 Surge Reducer



Class 9012, Type DCW



Class 9012, Type AKW-1



PRESSURE SWITCHES

WATER PUMP AND AIR COMPRESSOR TYPES

**CLASS
9013**

Designed for the control of electrically driven water pumps and air compressors, the Class 9013 devices cover the important electrical ratings for the direct control of motors in the usual pump and compressor applications.

DIAPHRAGM ACTUATED			DIFFERENTIAL INCREASES WITH RANGE					CONTACTS OPEN ON INCREASED PRESSURE			
Application		Pipe Connection	Poles	Pressure Range (P.S.I.)	Differential (P.S.I.)	General Purpose Enclosure NEMA 1		Drip Proof Enclosure NEMA 2		Explosion Proof Enclosure NEMA 7 and 9	
						Type	Price	Type	Price	Type	Price
Heavy Duty	Water or Air	1/4" I.P.T. C	2	20-180	10-40	ASG-8 F	\$22.10	ASW-8	\$59.40	ASR-8	\$118.00
				25-250	18-45	ASG-11 F	22.10	ASW-11	59.40	ASR-11	118.00
			3	20-180	10-40	ASG-14	29.20	ASW-14	66.50	ASR-14	122.00
				25-250	18-45	ASG-17	29.20	ASW-17	66.50	ASR-17	122.00
Standard Duty		1/4" I.P.T. C		20-80	12-35	GSG-2	15.25	GSW-2★	83.80	GSR-2	80.75
				60-200	18-40	GHG-2	15.25	GHW-2★	83.80	GHR-2	80.75
Domestic Duty	Water	1/4" O.P.T. *	2	20-65	10-30	FSG-9	5.40				
				20-80	10-30	FYG-2	8.10				
				20-65	10-30	FSG-2	5.40				
				WEATHER-PROOF ENCLOSURE NEMA 3							
				20-80	10-30	HSW-2Y	13.50				

1/8" or 3/8" taps also available at no extra charge.
 *Type FSG & FYG switches also furnished with 3/8" I.P.T., 3/8" compression, 1/4" flare connections at no extra charge. 1/4" I.P.T., 1/4" & 1/2" compression & 3/8" flare connection \$0.30 additional. A Form P pulsation plug is automatically furnished unless the order states "Omit Plug". This does not apply to O.E.M. orders.
 ★NEMA 4, water-tight enclosure.
 NOTE: Stock list and shipping schedule available on request.

STOCK SETTINGS

ASG-8F	ASG-11F	ASG-14	ASG-17	GSG-2	GHG-2	FSG-9	FSG-2	FYG-2	ASW-8	ASW-11	ASW-14	GSW-2	ASR-11	GSR-2	GHR-2
20-40 80-100 120-150 145-175	80-100 120-150 145-175	20-40 80-100 120-150	145-175	20-40 40-60 60-80	20-40 80-100 120-150 145-175	20-40	20-40 30-50 40-60	20-40 60-80	20-40 80-100	145-175 225-250	80-100	20-40	145-175	20-40 80-100 120-150 145-175	20-40 80-100 120-150 145-175

PRICES FOR ADDITIONS AND SPECIAL FEATURES

Feature†	Form Letter	With Type ASG	With Type ASW	With Type ASR	With Type GHG	With Types GHW, GHR	With Types GSW, GSR	With Types FSG, FYG	With Type GSG
Oil Resisting Diaphragm	Form D	★	★	★	★	★	★	N.C.	★
Mounting Feet	Form F	★	★	★	★	★	★	★	★
Manual Cut-off Lever	Form M1	★	★	★	★	★	★	\$.65	★
Low Pressure Cut-off	Form M4	★	★	★	★	★	★	1.75	★
.060 Pulsation Plug	Form P	N.C.	N.C.	N.C.	N.C.	N.C.	★	.15	★
Reverse Action (Contacts Open on Decreased Pressure)	Form R	\$ 4.90	\$ 4.90	\$ 4.90	\$ 4.90	\$ 4.90	\$ 4.90		\$ 4.90
2-Way Release Valve	Form X	5.55	12.30	15.70	5.55	15.70	15.70		5.55
3-Way Release Valve	Form Y	8.80	16.10	19.50					

★Furnished as standard on these switches. ●FSG types only. †Blank space indicates features not available.

ELECTRICAL RATINGS — HORSEPOWER

Type No.	Single Phase AC		Polyphase AC			Direct Current		
	110 V.	220 V.	220 V.	440 V.	550 V.	32 V.	115 V.	230 V.
ASG	2	3	6	5	5	1/2	1	1
GSG, GHG	2	3	6	5	5	1/2	1	1
HHG-Y, FYG	1 1/2	2	3			1/4	1/2	1/2
HHG, FSG	1	1	1			1/4	1/2	1/2
HSW-2Y	1 1/2	2	3			1/4	1/2	1/2

‡1/4 HP with Form M1 or M4, where applicable.

PACKAGED PRESSURE SWITCHES

Type FSG or FYG switches can be furnished in an attractive 3 color display box which holds 8 controls (or 6 if Form M1 or M4) individually packed and labeled. There is no extra charge for individual packaging or display cartons on sales to distributors or dealers. Specify "Pack in display box". For individual packages or bulk pack, so specify.

ORDERING INFORMATION REQUIRED

- Specify class and type number of switch.
- Give cut-out and cut-in pressures within the limits specified.
- If special features are desired, order as Class 9013, Type, Form selecting the correct form letter from the table above. If more than one form letter is used, arrange letters in alphabetical order as "Class 9013, Type ASG-8, Form FX".
- Specify individual, bulk or display (where applicable) pack.



Type ASG-11
Form FX



Type GSG-2



Type HSW-Y
Weatherproof
Enclosure



Type FSG-2



Type FSG, Form M4
Low Pressure Cut-off



PRESSURE, TEMPERATURE & VACUUM SWITCHES

PRESSURE SWITCH

Small Air Compressor Applications With or Without Release Valve

CLASS
9013

CONTACTS OPEN ON INCREASED PRESSURE

1 HP RATED — NEMA 1 ENCLOSURE

Type	Connection	Pressure Range Cutout (P.S.I.)	Differential (P.S.I.)	Dimensions (Approximate)	Weight	Price	Stock Setting	
HHG-2	1/4 i.p.t.	40-100	17-34	3 1/4" x 3 1/4" x 2 1/16"	1 1/2#	\$ 6.75	HHG-2	80-100
HHG-9	1/4 o.p.t.					6.75	HHG-2X	70-100, 80-100
							HHG-9X	80-100
HHG-12	1/4 i.p.t.	80-150	27-40	3 1/4" x 3 1/4" x 2 1/16"	1 1/2#	6.75	HHG-12	90-120, 115-150
HHG-19	1/4 o.p.t.					6.75	HHG-12X	115-150
							HHG-19X	115-150

Release valve available. Specify Form X. Add \$2.00.
Switches can also be furnished with 1/8" and 3/8" inside pipe tap.
For 1 1/2 Hp device add "Y" to Type: HHG-2Y add \$1.65
For electrical Ratings see preceding page.

SCHEDULE X DISCOUNT

VACUUM PUMP CONTROLS

CLASS
9016

GENERAL DUTY

NEMA 1 ENCLOSURE

Type	Range (Ins. Hg.)	Differential (Ins. Hg.)	Poles	Stock Settings	Dimensions Approximate	Weight	Price
GVG-1	5" 25"	4" 12"	2	3" 8" 16 1/2" 25"	4 3/8" x 7 1/8" x 4 1/2"	4#	\$ 28.40
BSG-1	0" 30"	2" 16"	1	3" 7" 17" 22" 19"-25"	2 1/8" x 5 1/4" x 5 1/16"	1 1/2#	28.40

Reverse action (Form R is available on BSG-1.
3-Way lever (Float only — Vacuum and Float — Continuous) can be supplied on GVG Types (See Cut). Add \$ 5.80.

SCHEDULE X DISCOUNT

TEMPERATURE SWITCHES

General Duty Applications, Heating Type — Non Cross Ambient

CLASS
9025

CLASS 9025

CONTACTS: 1 N.O.-1 N.C.

NEMA 12 ENCLOSURES

Range °F Failing Temp. at Sea Level	Type	Price	Stock Settings	Adjustable Differential °F	
80-145	BCW-33	\$39.80	115-123°	9 to 35 at low end of range narrowing to 5 to 15 at high end of range	Capillary and Bulb Type 1 1/16" dia. x 3 3/8" long bulb with 6' of 1/2" dia. tubing. (vertical or horizontal* immersion)
145-210	BCW-32	\$39.80	180-188°		
210-275	BCW-35	\$39.80	Not Stock		
275-340	BCW-34	\$39.80			
80-145	BFW-33	\$32.80	115-123°		Direct Connected Type 1 1/16" dia. x 3" long element with 1/2-14 NPT (vertical immersion)
145-210	BFW-32	\$32.80	180-188°		

*When mounting bulb horizontally, side of bulb marked "Top" should be up. *2 N.O.-2 N.C. also available.

ACCESSORIES AND FEATURES

For 6' of Armored Capillary Tubing in Place of the Standard, Specify Form LA6. Add \$1.20
For 12' of Armored Capillary Tubing in Place of the Standard, Specify Form LA12. Add 3.60
For 16' of Armored Capillary Tubing in Place of the Standard, Specify Form LA16. Add 5.20
For 12' of Plain Capillary Tubing in Place of the Standard, Specify Form L12. Add 1.20
For 16' of Plain Capillary Tubing in Place of the Standard, Specify Form L16. Add 2.00

	Price
Class 9049 Type A-6A Tank Fitting — Use with Older BCW Devices having 1/8" Diam. Tubing.	\$3.50
Class 9049 Type A-6B Tank Fitting — Use with Current BCW Devices — 1/2" Diam. Tubing.	3.50
Class 9049 Type A-30 Well — For 9025 BFW Types (Brass)	4.15
Class 9049 Type A-34 Well — For 9025 BCW Types (Brass)	4.40
9049 A-31 Well — For BFW (Stainless Steel)	14.50
9049 A-35 Well — For BCW (Stainless Steel)	15.50

ELECTRICAL RATINGS — Same as for Class 9012 Industrial Pressure Switches.

SCHEDULE DS-1 DISCOUNT

ELECTRICAL RATINGS (HORSEPOWER)

Class	Type	Single Phase		Polyphase			DC	
		115 Volts	230 Volts	220 Volts	440 Volts	550 Volts	115 Volts	230 Volts
9016	GVG-1	2	3	5	5	5	1	1
9016	BSG-1	1	1				1/2	1/2
9036	AG-5 AW-5, AR-5	2	3	5	5	5	1	1
9036	GG-2	2	3	5	5	5	1	1
9036	FG-1	1	1	1			1/4	1/4
9036	DG-2 DW-1, DR-1	1 1/2	2	3	1	1	1/2	1/2
9037	GG-4 GG-5, GG-6	2	3	5	5	5	1	1
9036	KG	1 1/2						
9037	HG-1, HG-2	1	1	1			1/4	1/4
9037	HG-3, HG-4, HR, HW	1 1/2	2	3	1	1	1/4	1/4
9038	AG-1, AW-1, AR-1	3	2	3	1	1	1/2	1/2

ORDERING INFORMATION REQUIRED: Order by class and type number.



FLOAT SWITCHES

GENERAL DUTY FLOAT SWITCHES

**CLASS
9035**

Class 9035 controls are rod or chain operated, for use in controlling liquid levels in open tank applications. Switches with accessories include 7" float with two 2 1/2' foot sections of rod or 15 feet of chain.

*CONTACTS OPEN ON LIQUID RISE

2 POLES

Description	General Purpose Enclosure NEMA 1		Water-tight Enclosure NEMA 4		Explosion Proof NEMA 7 & 9	
	Type	Price	Type	Price	Type	Price
Without Accessories (Float, Rod, etc.)	DG-1	\$ 22.00	BW-1	\$ 49.50	DR-1	\$ 64.00
Rod Operated, Wall Mounting	DG-2	44.00	BW-2	88.00	DR-2	102.00
Rod Operated, Floor Mounting	DG-3	58.00	BW-3	102.00	DR-3	116.00
Chain Operated, Wall Mounting	DG-4	44.00	BW-4	88.00	DR-4	102.00
Chain Operated, Floor Mounting	DG-5	58.00	BW-5	102.00	DR-5	116.00

*For reverse action add Form R to Class and Type number. Standard action BW & DR switches furnished with float on right. Standard action DG switches furnished with float on left. **Form R does not apply to switches without accessories.**

ELECTRICAL RATINGS (HORSEPOWER)

Types	Single Phase		Polyphase			DC	
	115 Volts	230 Volts	110 Volts	220 Volts	440-550 Volts	115 Volts	230 Volts
DG, DR	1	1	1	1	1	1/4	1/4
BW	2	3	3	5	5	1	1

SCHEDULE DS-1 DISCOUNT

**CLASS
9036**

FOR OPEN TANK OR SUMP APPLICATIONS

Class 9036 float switches lend themselves to a variety of needs for open tank control with sump or standard operation.

Application	Poles	General Purpose NEMA 1		Drip-proof NEMA 2		Explosion Proof NEMA 7 & 9			
		Type	Price	Type	Price	Type	Price		
CONTACTS OPEN ON LIQUID RISE — Reverse Action Available (Form R)								LEVER ACTUATED	
Heavy Duty	2	AG-5	\$ 22.10	AW-5	\$ 59.40	AR-5	\$111.00		
	3	AG-6	29.20	AW-6	65.50	AR-6	118.00		
CONTACTS CLOSE ON LIQUID RISE — Reverse Action Available (Form R)								LEVER ACTUATED	
Standard Duty.	2	GG-2	\$ 15.25						
General Duty	2	FG-1	8.95	DW-1	\$ 56.55	DR-1	\$ 58.30		
		DG-2	10.95						

**CLASS
9036**

WEATHERPROOF FLOAT SWITCH NEMA 3 Enclosure

CONTACTS CLOSE ON LIQUID RISE *

TWO POLE

Type	Price	Lever Length	Approximate Dimensions (Excluding Lever)	Weight
NW-1	\$25.	7 1/4" Min. — 8" Max.	3 1/2" x 4 1/4" x 4 1/2"	1 3/4 Lbs.

*For Reverse Action specify Form R.

SUMPTROL® FLOAT SWITCHES

**CLASS
9036**

These devices are designed specifically for sump pumps or cellar drainers of the small domestic type. Weight operated controls include two weights, 36" chain and compensating spring. Accessories for float operation are not supplied.

CONTACTS CLOSE ON LIQUID RISE

Features	Type of Operation	General Purpose Enclosure NEMA 1					
		Poles	Type	Price	Poles	Type	Price
With Mounting Bracket and Two Cord Entrances	Weight	1	KG-7	\$ 5.25	2	KG-1	\$ 6.35
	Float		KG-8	4.00		KG-2	5.10
With Conduit Bushing	Weight		KG-9	5.25		KG-3	6.35
	Float		KG-10	4.00		KG-4	5.10
With Conduit Bushing and One Extra Cord Entrance	Weight	1	KG-11	5.25	2	KG-5	6.35
	Float		KG-12	4.00		KG-6	5.10

Type KG-8 is current equivalent for 9046CG.

Bulk packaging quantity—50. Specify individual or bulk packaging on large orders.

SCHEDULE X DISCOUNT

ORDERING INFORMATION REQUIRED: Order by class and type.



Class 9035, Type BW-3



Class 9036, Type AG-5



Class 9036, Type GG-2



Class 9036, Type FG-1



Class 9036, Type KG-1



FLOAT SWITCHES & VALVES

FOR CONDENSATE PUMPS

Class 9037 controls are primarily used on condensate pumps. Type GG switches are flange mounted and float movement is transmitted through a bellows seal. Type HG switches are attached to the tank by means of a 2½ inch screw-in connection. An external pointer indicates the float position within the tank when the unit is mounted.

CLASS
9037

CONTACTS CLOSE ON LIQUID RISE — FOR REVERSE ACTION SPECIFY FORM R

Application	Poles	★ "E" Distance	Figure No. (Float Movement)	General Purpose NEMA 1	
				Type	Price †
Standard Duty	2	8"	Fig. 1—(Above and below center line).....	GG-4	\$52.30
			Fig. 2—(Below center line).....	GG-5	\$2.30
			Fig. 3—(For vertically mounted switch)	GG-6	\$2.30

★ "E" distance measured from fulcrum of rod to center of round float. Lengths of 6, 10, 12, 14 and 16 inches are also available.

CONTACTS CLOSE ON LIQUID RISE — FOR REVERSE ACTION SPECIFY FORM R

Application	Poles	Float Position	NEMA 1 General Purpose Enclosure				Water-tight NEMA 4		Explosion Proof NEMA 7 and 9	
			110-220 Volts		110-550 Volts		110-550 Volts		110-550 Volts	
			Type	Price †	Type	Price †	Type	Price †	Type	Price †
General Duty	2	Right	HG-1	\$ 27.40	HG-3	\$ 29.40	HW-3	\$ 85.00	HA-1	\$ 82.00
		Left	HG-2	27.40	HG-4	29.40	HW-4	85.00	HA-4	82.00

ALTERNATORS

Designed to provide positive motor alternation in the operation of two motors. Function is to equalize motor wear on duplex systems, with the added provision that the alternator will start the second motor where extra capacity under peak load conditions is required.

CLASS
9038
9039

Application	Description	General Purpose NEMA 1		Water-tight NEMA 4		Explosion Proof NEMA 7	
		Type	Price	Type	Price	Type	Price
For Open Tank or Sump Systems Using Duplex Pumps	Class 9038† Mechanical	AG-1*	\$ 43.60	AW-1	\$101.50	AR-1	\$ 98.50
General Duty	Class 9039‡ Electrical 110-600 Volts, 25-60 Hertz AC	PG-1	112.00	PW-1	212.00	PR-1	316.00

*For an additional high water alarm circuit — Specify AG-1 Form N5. . . . add \$22.50.

CLASS 9038 CONTACTS CLOSE ON LIQUID RISE (REVERSE ACTION AVAILABLE — FORM R)

† SCHEDULE X DISCOUNT

‡ SCHEDULE DS-1 DISCOUNT

VALVES

The Class 9043 Type AG valve is a two-way solenoid valve designed for use with water, oil and air, and other liquids and gasses.

CLASS
9043

NORMALLY CLOSED

TWO-WAY SOLENOID VALVE

Application	Inlet & Outlet Connection I.P.T.	Current	Orifice Size	NEMA 1 Enclosure			
				Bronze Valve Seat		Viton Valve Seat	
				Type	Price	Type	Price
Freon, Methyl Chloride, Sulphur Dioxide, Air, Oil or Water	¾"	AC	½"	AG-6	\$25.00	AG-16	\$25.00
			¾"	AG-7	25.00	AG-17	25.00
			1"	AG-8	25.00	AG-18	25.00
		DC	½"	AG-4	27.00	AG-14	27.00
			¾"	AG-5	27.00	AG-15	27.00
			1"				

SCHEDULE DS-1 DISCOUNT

ACCESSORIES FOR CLASS 9036 and 9038 FLOAT SWITCHES†

Standard accessories consist of one 7" float (tapped at top or with center hole) and two 2½ foot sections of threaded tubing and stops. These accessories are available from stock in brass, aluminum, monel or stainless steel.

CLASS
9049

Material	Float	Type	Price
Copper coated float with brass tubing.	Tapped at Top	AG	\$ 19.60
	Center hole	AGC	27.40
Copper coated float with aluminum tubing.	Tapped at Top	AGA	19.60
	Center hole	AGCA	27.40
Stainless steel float and stainless steel tubing.	Tapped at Top	AGS	95.70
	Center hole	AGCS	161.90
Monel float and Monel tubing	Tapped at Top	AGM	83.90
	Center hole	AGCM	148.90

†Class 9036 and 9037 devices come complete with floats and rods.

SCHEDULE X DISCOUNT

ORDERING INFORMATION REQUIRED: Order by class and type number.



TIMING RELAYS

PNEUMATIC TYPE

CLASS
9050

Class 9050 timing relays are used in many industrial applications where dependable operation and ease of adjustment over suitable ranges of timing are required. All ac timing relays have an invertible magnet which allows conversion in the field from time delay after energization to time delay after de-energization or vice versa. (See page 200 for dimensions).

ADJUSTABLE RANGE — .05 SECOND TO 3 MINUTES

±10% REPEAT ACCURACY

TYPE B+ FOR AC OPERATION SURFACE MOUNTING ▲25-60 HERTZ 600 VOLTS MAX.

Type of Operation ⊕	Features				General Purpose Enclosure NEMA Type 1		Water-tight & Dust-tight Enclosure NEMA Type 4 & 5-12		For Hazardous Locations NEMA Type 7 & 9		Open Type		Flush Mounting Without Pull Box	
	Dial	Time Delay Contacts *		Instantaneous Interlocks ‡	Type	Price	Type	Price	Type	Price	Type	Price	Type	Price
		N.O.	N.C.											
Time Delay after De-energization of Relay (Off Delay)	Without Dial	1	1	...	BG-1D	\$ 60.	BW-1D	\$ 90.	BR-1D	\$ 160.	BO-1D	\$ 50.	BF-1D	\$ 58.
		1	1	1	BG-2D	65.	BW-2D	95.	BR-2D	165.	BO-2D	55.	BF-2D	63.
		1	1	2	BG-3D	70.	BW-3D	100.	BR-3D	170.	BO-3D	60.	BF-3D	68.
		2	2	...	BG-21D	75.	BW-21D	105.	BR-21D	175.	BO-21D	65.	BF-21D	73.
		2	2	1	BG-22D	80.	BW-22D	110.	BR-22D	180.	BO-22D	70.	BF-22D	78.
		2	2	2	BG-23D	85.	BW-23D	115.	BR-23D	185.	BO-23D	75.	BF-23D	83.
	With Dial	1	1	...	BG-4D	65.	BW-4D	95.	BR-4D	165.	BO-4D	55.	BF-4D	63.
		1	1	1	BG-5D	70.	BW-5D	100.	BR-5D	170.	BO-5D	60.	BF-5D	68.
		1	1	2	BG-6D	75.	BW-6D	105.	BR-6D	175.	BO-6D	65.	BF-6D	73.
		2	2	...	BG-24D	80.	BW-24D	110.	BR-24D	180.	BO-24D	70.	BF-24D	78.
		2	2	1	BG-25D	85.	BW-25D	115.	BR-25D	185.	BO-25D	75.	BF-25D	83.
		2	2	2	BG-26D	90.	BW-26D	120.	BR-26D	190.	BO-26D	80.	BF-26D	88.
Time Delay after Energization of Relay (On Delay)	Without Dial	1	1	...	BG-1E	60.	BW-1E	90.	BR-1E	160.	BO-1E	50.	BF-1E	58.
		1	1	1	BG-2E	65.	BW-2E	95.	BR-2E	165.	BO-2E	55.	BF-2E	63.
		1	1	2	BG-3E	70.	BW-3E	100.	BR-3E	170.	BO-3E	60.	BF-3E	68.
		2	2	...	BG-21E	75.	BW-21E	105.	BR-21E	175.	BO-21E	65.	BF-21E	73.
		2	2	1	BG-22E	80.	BW-22E	110.	BR-22E	180.	BO-22E	70.	BF-22E	78.
		2	2	2	BG-23E	85.	BW-23E	115.	BR-23E	185.	BO-23E	75.	BF-23E	83.
	With Dial	1	1	...	BG-4E	65.	BW-4E	95.	BR-4E	165.	BO-4E	55.	BF-4E	63.
		1	1	1	BG-5E	70.	BW-5E	100.	BR-5E	170.	BO-5E	60.	BF-5E	68.
		1	1	2	BG-6E	75.	BW-6E	105.	BR-6E	175.	BO-6E	65.	BF-6E	73.
		2	2	...	BG-24E	80.	BW-24E	110.	BR-24E	180.	BO-24E	70.	BF-24E	78.
		2	2	1	BG-25E	85.	BW-25E	115.	BR-25E	185.	BO-25E	75.	BF-25E	83.
		2	2	2	BG-26E	90.	BW-26E	120.	BR-26E	190.	BO-26E	80.	BF-26E	88.

TYPE C														FOR DC OPERATION														▲250 VOLTS MAX	
Time Delay after De- energization of Relay (Off Delay) Ⓢ	Without Dial	1	1			CG-1D	\$ 65.	CW-1D	\$ 95.	CR-1D	\$ 165.	CO-1D	\$ 55.	CF-1D	\$ 63.														
		1	1	1	1	CG-2D	70.	CW-2D	100.	CR-2D	170.	CO-2D	60.	CF-2D	68.														
		2	2			CG-21D	80.	CW-21D	110.	CR-21D	180.	CO-21D	70.	CF-21D	78.														
		2	2			CG-22D	85.	CW-22D	115.	CR-22D	185.	CO-22D	75.	CF-22D	83.														
		2	2			CG-1E	65.	CW-1E	95.	CR-1E	165.	CO-1E	55.	CF-1E	63.														
Time Delay after Energization of Relay (On Delay) Ⓢ	Without Dial	1	1			CG-1E	65.	CW-1E	95.	CR-1E	165.	CO-1E	55.	CF-1E	63.														
		1	1	1	1	CG-2E	70.	CW-2E	100.	CR-2E	170.	CO-2E	60.	CF-2E	68.														
		2	2			CG-21E	80.	CW-21E	110.	CR-21E	180.	CO-21E	70.	CF-21E	78.														
		2	2			CG-22E	85.	CW-22E	115.	CR-22E	185.	CO-22E	75.	CF-22E	83.														
		2	2	1		CG-1E	65.	CW-1E	95.	CR-1E	165.	CO-1E	55.	CF-1E	63.														

Ⓢ Also available with dial at \$5.00 additional.

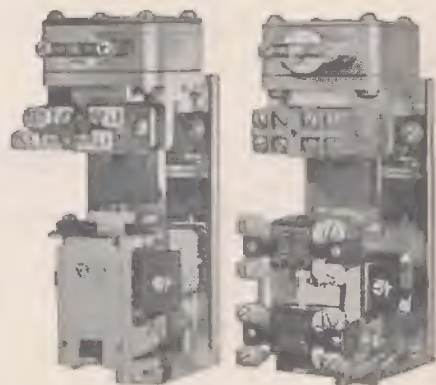
† Hardened magnet parts — \$6.00 additional; identify as Form HA (Available on ac timers only).

▲ See page 199 for Electrical Ratings.

* The time delay contacts of the timer with 1 N.O. and 1 N.C. timed contacts consist of one Class 9007 Type AO snap switch. This snap switch has an isolated normally open and normally closed circuit, but due to electrical clearance must be used on circuits of the same polarity. The time delay contacts of the timer with 2 N.O. and 2 N.C. timed contacts consist of one Class 9007 Type CO-3 two pole snap switch. Each pole is electrically separate from the other and can be used on opposite polarities. The contacts of each pole, however, are single pole, double throw and while electrically separate cannot be used on opposite polarities.

‡ Each interlock has single pole, double throw contacts. While the normally open and normally closed contacts of the interlock are isolated, due to electrical clearances they must be used on circuits of the same polarity. A total of two double circuit interlocks may be mounted on the Class 9050 Types B and C timing relays. Separate interlock kits for Type B timing relays may be ordered as Class 9999 Type R4 at \$5.00 each and for the Type C timing relays as Class 9999 Type R5 at \$5.00 each. While Type C, dc timers are only listed with 1 double circuit interlock, they can be supplied with 2 double circuit interlocks factory installed.

† Invertible magnets on all Type B, ac timers allow conversion from one type of operation to the other in the field without any additional parts. To change from time delay after de-energization to time delay after energization on Type C, dc timers, a conversion kit, Class 9999 Type K-5 for \$1.50 is required. To change from time delay after energization to time delay after de-energization on Type C, dc timers, order kit Class 9999 Type K-6 for \$1.00.



Type BC-1D

Type BO-23D



TIMING RELAYS

PNEUMATIC TYPE

ADJUSTABLE RANGE — .1 SECOND TO 1 MINUTE

±10% REPEAT ACCURACY

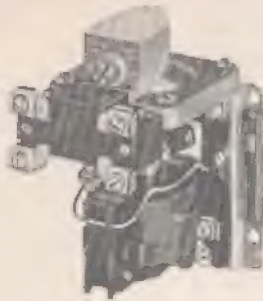
SINGLE POLE, DOUBLE THROW, SEPARATE CIRCUITS *

TYPE A — AC TIMER

CLASS
9050

50-60 HERTZ

600 VOLTS MAX.



Type AO-1E



Type AO-5DE

Type of Operation	General Purpose Enclosure NEMA Type 1		Open Type	
	Type	Price	Type	Price
Time Delay after De-energization of Relay (Off Delay) ‡	AG-1D	\$ 35.	AO-1D	\$ 32.
Time Delay after Energization of Relay (On Delay) ‡	AG-1E	35.	AO-1E	32.
Double-Header Timer ‡ Time Delay after De-energization and Energization (Off-On-Delay)	AG-5DE	62.	AO-5DE	52.

TYPE H — DC TIMER

250 VOLTS DC MAX. COIL RATING

600 VOLTS MAX.

Time Delay after De-energization of Relay (Off Delay)	HG-1D	\$ 46.	HO-1D	\$ 43.
Time Delay after Energization of Relay (On Delay)	HG-1E	46.	HO-1E	43.
Double-Header Timer ‡ Time Delay after De-energization and Energization (Off-On-Delay)	HG-5DE	130.	HO-5DE	110.

*Timing contacts consist of an isolated normally open and normally closed circuit. Due to electrical clearance, the normally open and normally closed circuits must be used on circuits of the same polarity.

‡Invertible magnets allow conversion from one type of operation to other in the field.

‡Timer consists of two timing heads operated by one magnet, one timing head gives time delay after energization and the other time delay after de-energization of the common magnet assembly.

For separate NEMA 1 enclosures, see Page 210.

ELECTRICAL CONTACT RATINGS (TIMING CONTACTS)

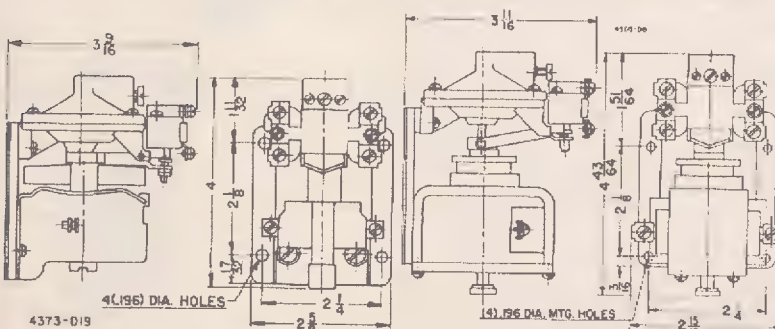
TYPE B 1 N.O., 1 N.C. CONTACTS						TYPE C 1 N.O., 1 N.C. CONTACTS						TYPE A			TYPE H		
AC Pilot Duty Amps. ★			DC Pilot Duty Amps. ▲			AC Pilot Duty Amps. ★			DC Pilot Duty Amps. ▲			AC Pilot Duty Amperes ★			DC Pilot Duty Amperes ▲		
Volts	Make	Break	Volts	Single Throw	Double Throw	Volts	Make	Break	Volts	Single Throw	Double Throw	Volts	Make	Break	Volts	Double Throw	Single Throw
110	40	15	110	0.5	0.25	110	40	15	110	2.0	0.5	110	60	6	115	0.25	1.1
220	20	10	220	0.25	0.1	220	20	10	220	0.5	0.2	220	30	3	230	0.1	0.25
440	10	6	440			440	10	6	440			440	15	1.5	600		0.05
600	8	5	600	0.05		600	8	5	600	0.1	0.02	600	12	1.2			
TYPE B 2 N.O., 2 N.C. CONTACTS †						TYPE C 2 N.O., 2 N.C. CONTACTS †											
0-115	30	3	115	1.0	0.2	0-115	30	3	115	1.0	0.2						
115-600	3450 VA	345 VA	230	0.3	0.1	115-600	3450 VA	345 VA	230	0.3	0.1						
			600	0.1					600	0.1							

★ AC pilot duty rating is based on a 35% power factor.

▲ DC pilot duty rating is based on inductive loads such as coils and solenoids.

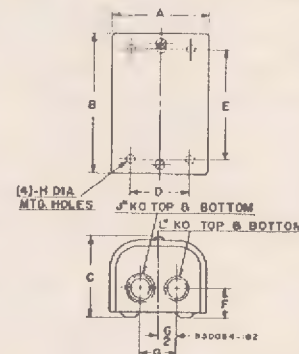
† AC continuous ampere rating is 10 amperes based on a 75% power factor.

APPROXIMATE DIMENSIONS AND SHIPPING WEIGHTS



Types AO-1E, 1D
Weight — 2 lbs.

Types HO-1E, 1D
Weight — 3 lbs.



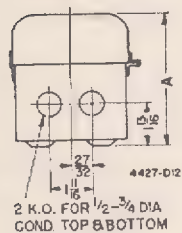
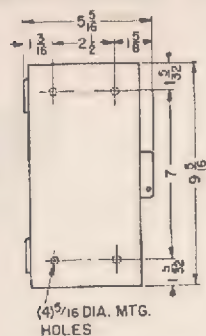
Types AG and HG
General Purpose Enclosure

Type	Dimensions										Wt. Lbs.
	A	B	C	D	E	F	G	H	J	L	
AG-1E, 1D HG-1E, 1D	4 23/32	5 23/32	4 23/32	3 3/8	4 3/8	1 1/16	2	3/32	1/2, 3/4, 1	1/2, 3/4, 1	4 1/2
AG-5DE HG-5DE	6 1/2	8 23/32	4 23/32	4 3/4	7 3/8	1 1/16	1 1/8	3/16	1/2, 3/4, 1	1/2, 3/4, 1	5 6/8

ORDERING INFORMATION REQUIRED
Specify class and type number of timing relay, give voltage and frequency for the operating coil.

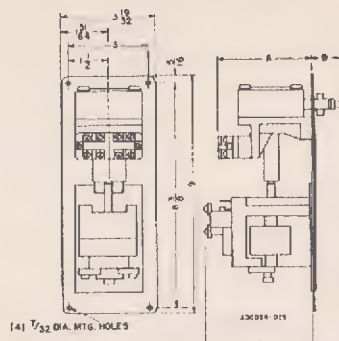


TIMING RELAYS



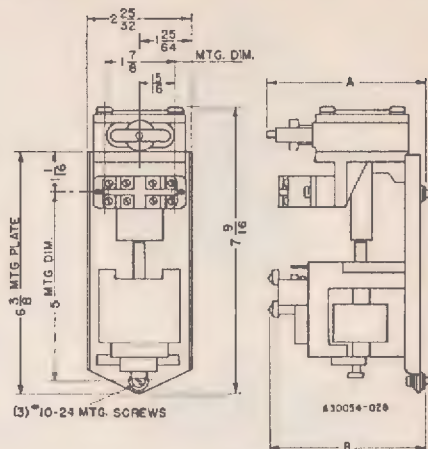
Types BG and CG
General Purpose Enclosure
Weight — 8½ lbs.

APPROXIMATE DIMENSIONS AND SHIPPING WEIGHTS



Type	A	B	C
BF1, 2, 3 D & E	4	1½	4
BF4, 5, C D & E	4	1½	4
CF1, 2 D & E	3½	1½	4½
BF 21, 22, 23 D & E	3½	1½	4
BF 24, 25, 26 D & E	3½	1½	4
CF 21, 22 D & E	3½	1½	4½

Types BF and CF
Weight — 8 lbs.



Type	A	B
BO1, 2, 3, 21, 22, 23 D & E	4 1/4	4
BO4, 5, 6, 24, 25, 26 D & F	4 7/8	4
CO1, 2, 21, 22 D & E	4 3/16	4 1/4

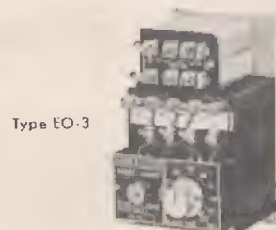
Types BO and CO
Weight 5 lbs.

CLASS
9050

SOLID STATE TIMERS

INDUSTRIAL TIMING RELAYS

120 OR 240 VOLTS		CLASS 9050				50-60 HERTZ	
Description	Maximum Time	Open Type		General Purpose Enclosure NEMA Type 1		Dust-tight Industrial Use Enclosure NEMA Type 12	
		Type	Price	Type	Price	Type	Price
Industrial Timing Relay, Standard	10 Seconds	EO-3	\$ 78.	EG-3	\$ 83.	EA-3	\$ 98.
Industrial Timing Relay, Special Calibration	30 Seconds	EO-3-S1	93.	EG-3-S1	98.	EA-3-S1	113.



Type EO-3

SEQUENCING TIMERS WITH SOLID STATE OUTPUT

120 VOLTS		CLASS 9050		50-60 HERTZ	
Maximum Adjustable Time Delay of Each On and Off Period	Open Type		General Purpose Enclosure NEMA Type 1		
	Type	Price	Type	Price	
10 Seconds	EO-22	\$ 90.	EQ-22	\$ 93.	
30 Seconds	EO-23	90.	EQ-23	93.	



Type EO-22

COMPACT TIMING RELAYS

120 VOLTS		CLASS 9050		50-60 HERTZ	
Operation	Maximum Time	Open Type		General Purpose Enclosure NEMA Type 1	
		Type	Price	Type	Price
Time Delay After Energization (On Delay)	10 Seconds	EG-12E	\$ 60.	EG-12E	\$ 63.
	30 Seconds	EO-13E	60.	EG-13E	63.
Time Delay After De-energization (Off Delay)	10 Seconds	EO-12D	60.	EG-12D	63.
	30 Seconds	EO-13D	60.	EG-13D	63.



Type EO-12E

All Solid State Timers have $\pm 2\%$ REPEAT ACCURACY with constant temperature and line voltage. For electrical ratings and dimensions see Page 201.

ORDERING INFORMATION REQUIRED

1. Class and type number.
2. Line voltage.
3. Specify maximum time calibration in seconds, for EO-3-S1, EG-3-S1, and EA-3-S1 devices. Unless specified, timer will be supplied with 30 second calibration.

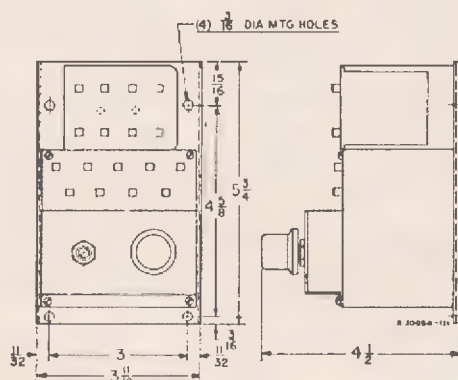


CLASS
9050

Device	Description of Output	AC Continuous Ampere Rating (Based on 75% Power Factor)	AC Pilot Duty (Based on 35% Power Factor)			DC Pilot Duty ▲	
			Volts	Make	Break	Volts	Make & Break
Compact Timing Relay	Encapsulated Relay with One Normally Open and One Normally Closed Contact	120 Volts, 3 Amps. Max.	0—120	15 Amps.	1.5 Amps.	0—30	1.5 Amps.
Industrial Timing Relays	Class 8501 Type FDO-22 Relay, Double Pole, Double Throw	277 Volts, 10 Amps. Max.	0—115	60 Amps.	6 Amps.	0—24	10 Amps.
			115—277	6900 VA	690 VA	25—250	24 VA
Sequencing Timer	Solid State	120 Volts, 1 Amp. Max.	10 Amps. Peak Inrush for First ½ Cycle, 1 Amp. RMS Continuous at 120 Volts				

ORDERING INFORMATION REQUIRED

1. Class and type number.
2. Line voltage
3. Specify maximum time calibration in seconds, for EO-3-S1, EG-3-S1, and EA-3-S1 devices. Unless specified, timer will be supplied with 30 second calibration.

Types EO-12D, EO-12E, EO-13D,
EO-13E, EO-22 and EO-23

CLASS
9055

SPST 10 AMPERE CONTACT



Class 9055
Type AO-118R



Class 9055
Type NO-107

Max. Continuous Coil Amps.	Inverse Time Delay Trip					Instantaneous Trip ‡					
	Trip Current Adjustment Range	General Purpose Enclosure NEMA Type 1		Open Type		Trip Current Adjustment Range		General Purpose Enclosure NEMA Type 1		Open Type	
		Type	Price	Type	Price	Auto Reset	Hand Reset	Type	Price	Type	Price
1.4	0.7-1.4	AG-107	\$34.	AO-107	\$22.	0.9-2.0	0.62-1.24	NG-107	\$37.	NO-107	\$25.
2.0	1.0-2.0	AG-108	34.	AO-108	22.	1.4-2.9	0.9-1.8	NG-108	37.	NO-108	25.
3.2	1.6-3.2	AG-109	34.	AO-109	22.	2.2-4.6	1.45-2.9	NG-109	37.	NO-109	25.
4.0	2.0-4.0	AG-110	34.	AO-110	22.	2.8-5.8	1.8-3.6	NG-110	37.	NO-110	25.
4.8	2.4-4.8	AG-111	34.	AO-111	22.	3.3-7.0	2.1-4.3	NG-111	37.	NO-111	25.
7.0	3.5-7.0	AG-112	34.	AO-112	22.	4.8-10	3.1-6.2	NG-112	37.	NO-112	25.
8.0	4.0-8.0	AG-113	34.	AO-113	22.	5.6-11.6	3.6-7.2	NG-113	37.	NO-113	25.
10.	5.0-10	AG-114	34.	AO-114	22.	7.0-14.5	4.5-9.0	NG-114	37.	NO-114	25.
12.	6.0-12	AG-115	34.	AO-115	22.	8.4-17.5	6.4-10.8	NG-115	37.	NO-115	25.
20.	10-20	AG-116	34.	AO-116	22.	14-29	9-18	NG-116	37.	NO-116	25.
32.	16-32	AG-117	34.	AO-117R	22.	23-47	14-29	NG-117	37.	NO-117R	25.
48.	24-48	AG-118	34.	AO-118R	22.	34-69	21-43	NG-118	37.	NO-118R	25.
60.	30-60	AG-119	34.	AO-119R	22.	40-83	26-52	NG-119	37.	NO-119R	25.
80.	40-80	AG-120	37.	AO-120R	25.	56-117	36-72	NG-120	40.	NO-120R	28.
120.	60-120	AG-121	37.	AO-121R	25.	82-170	52-104	NG-121	40.	NO-121R	28.
160.	80-160	AG-122	49.	AO-122R	37.	110-220	72-144	NG-122	52.	NO-122R	40.
210.	107-210	AG-123	49.	AO-123R	37.	147-286	96-192	NG-123	52.	NO-123R	40.
320.	160-320	AG-124	52.	AO-124R	40.	230-470	144-287	NG-124	55.	NO-124R	43.
420.	210-420	AG-125	66.	AO-125R	54.	290-610	191-383	NG-125	69.	NO-125R	57.
640.	320-640	AG-126	86.	AO-126R	68.	435-915	287-575	NG-126	89.	NO-126R	71.

AUTOMATIC RESET is standard on all relays. For HAND RESET specify Form HR and add \$2.50. One NORMALLY CLOSED contact is standard. To substitute one NORMALLY OPEN contact, specify Form Y44 and add \$2.50

‡ Not intended for prolonged use on current in excess of trip setting or continuous rating, whichever is lower. For load monitoring applications select Class 9055 Type B relay from General Industry Control Catalog.

★Relays may also be used on dc, but trip ranges shown do not apply. Refer to General Industry Control Catalog.

ORDERING INFORMATION REQUIRED: Class and type number.



THERMAL OVERLOAD RELAYS

MELTING ALLOY TYPE

**CLASS
9065**

Melting alloy overload relays protect motors against overheating from operating overcurrents. Interchangeable thermal units, combining heater winding and solder pot in one piece, are load tested at the factory. The normally closed relay contact is used in the coil circuit of a magnetic contactor.

FOR SEPARATE MOUNTING

600 VOLTS AC MAX., 250 VOLTS DC MAX.▲

Description	Ampere Rating	General Purpose Enclosure NEMA Type 1		Open Type for Separate Panel Mounting			Open Type for Mounting on Terminal Block Channel		Components for User Assembly			
		Type	Price*	Left Hand Type	Right Hand Type	Price*	Factory Assembled Unit		Basic Relay		Bracket Kit	
							Type	Price*	Type	Price*	Type	Price
SINGLE POLE CONSTRUCTION (ONE N.C. CONTACT PER RELAY)*												
1 Relay	25	CG-1	\$ 13.	CO-1	CO-1R	\$ 6.	CO-1M	\$7.	CO-1	\$6.	LM-1	\$1.00
	50	TC-1	20.	TO-1	TO-1R	8.			TO-1	8.	LM-1	1.00
	100	UG-1	27.	UO-1	UO-1R	10.			UO-1	10.		
	150	FG-1	49.	FO-1L	FO-1R	15.			FO-1L	15.		
	300	GG-1	91.	GO-1L	GO-1R	56.			GO-1L	56.		
2 Relays	150	FG-2	66.	FO-2	FO-2	36.			FO-2	36.		
	300	GG-2	147.	GO-2	GO-2	112.			GO-2	112.		
3 Relays	150	FG-3	88.	FO-3	FO-3	53.			FO-3	53.		
	300	GG-3	208.	GO-3	GO-3	168.			GO-3	168.		
THREE POLE CONSTRUCTION (ONE COMMON N.C. CONTACT)*												
1 Relay With 2 Thermal Units	30	SEG-5	\$20.	SEO-5	SEO-5	\$12.	SMO-5	\$13.	SEO-5	\$12.	SM-2	\$1.00
	50	SEG-8	29.	SEO-8	SEO-8	16.	SMO-8	17.	SEO-8	16.	SM-2	1.00
	100	SEG-12	33.	SEO-12	SEO-12	20.						

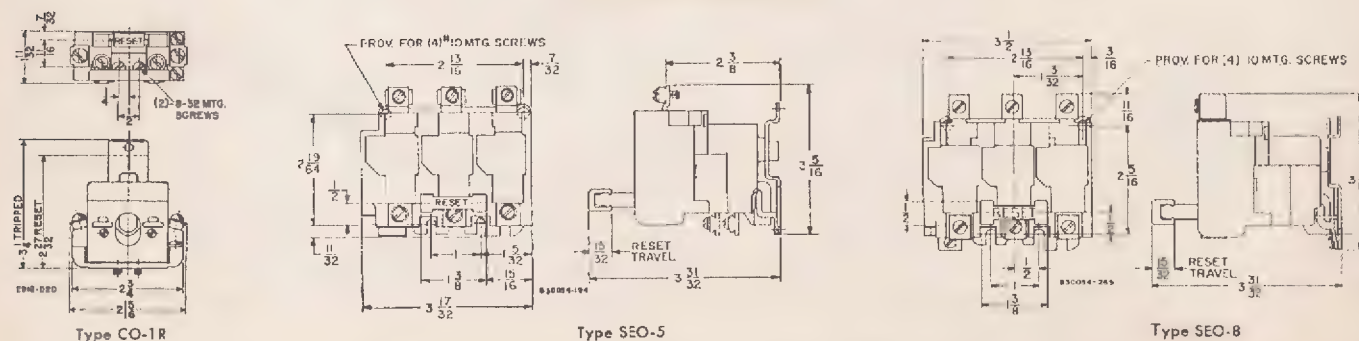
FOR REPLACEMENT ON CLASS 8536 STARTER

Class 8536 Starter			Class 9065 Overload Relay		
No. of Poles	Size	Type	L. H. Type	R. H. Type	Price*
2, 3 or 4-Pole†	0	B (Series A Only)	CO-1	CO-1R	\$ 6.
	1	C (Series A or B)	CO-1	CO-1R	6.
	2	D (All)	TO-1	TO-1	8.
	3	E (All)	UO-1	UO-1	10.
	4	F (Series C Only)	FO-1L	FO-1R	15.
	5	G (Series B Only)	GO-1L	GO-1R	56.
	5	G (Series C Only)	GO-11L	GO-11R	56.
2 Pole with 1 Thermal Unit	0	SB (Series A)	SDO-4	SDO-4	6.
	1	SC (Series A)	SDO-4	SDO-4	6.
	1P	SC (Series A)	SDO-10	SDO-10	8.
	2	SD (Series A)	SDO-7	SDO-7	8.
	3	SE (Series A)	SDO-11	SDO-11	10.
3 or 4-Pole with 2 Thermal Units	0	SB (Series A)	SDO-5	SDO-5	12.
	1	SC (Series A)	SDO-5	SDO-5	12.
	2	SD (Series A)	SDO-8	SDO-8	16.
	3	SE (Series A)	SDO-12	SDO-12	20.

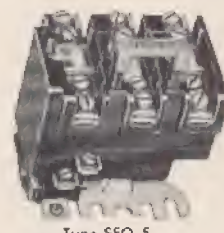
*Prices include overload relay thermal units. Deduct \$1.50 each if thermal units are omitted.
 †3 and 4-pole starters use one L. H. and one R. H. relay. 2-pole starters use one L. H. relay only.
 ‡Relay has provisions for 2 or 3 thermal units as standard — add \$1.50 for third thermal unit.
 ▲Contacts of Type S relays are suitable for use on ac only.
 ★For additional N.O. (alarm circuit) contact, specify Form Y34 and add \$4.00 per relay.

ORDERING INFORMATION REQUIRED: 1. Class and type number of relay.
 2. Quantity and type number of thermal units.
 Select thermal units from table 4 on page 220.

APPROXIMATE DIMENSIONS



Type CO-1R



Type SEO-5



THERMAL OVERLOAD RELAYS

BIMETALLIC TYPE

Bimetallic overload relays use an indirectly heated bimetal strip to detect motor overloads. They may be set in the field to provide either hand or automatic reset. A dial allows adjustment of the trip current from 85 to 115% of nominal rating.

CLASS
9065

FOR SEPARATE MOUNTING

600 VOLTS AC MAX., 250 VOLTS DC MAX.

Description (Single Pole Construction)	Ampere Rating	General Purpose Enclosure NEMA Type 1		Open Type for Separate Panel Mounting			Open Type for Mounting on Terminal Block Channel					
		Type	Price*	Left Hand Type	Right Hand Type	Price*	Factory Assembled Unit		Components for User Assembly			
							Type	Price*	Basic Relay		Bracket Kit	
1 Relay	25	ARG-1	\$ 13.	ARO-1L	ARO-1R	\$ 6.	ARO-1M	\$ 7.00	ARO-1L	\$ 6.	LB-1	\$ 1.00
	50	ATG-1	20.	ATO-1L	ATO-1R	8.			ATO-1L	8.	LB-1	1.00
	100	AUG-1	27.	AUO-1L	AUO-1R	10.						
	150	AFG-1	49.	AFO-1L	AFO-1R	15.						
	300	AGG-1	91.	AGO-1L	AGO-1R	56.						
2 Relays	25	ARG-2	20.	ARO-2		15.						
	50	ATG-2	29.	ATO-2		19.						
	100	AUG-2	38.	AUO-2		23.						
	150	AFG-2	66.	AFO-2		36.						
	300	AGG-2	147.	AGO-2		112.						
3 Relays	25	ARG-3	32.	ARO-3		22.						
	50	ATG-3	43.	ATO-3		28.						
	100	AUG-3	54.	AUO-3		34.						
	150	AFG-3	88.	AFO-3		53.						
	300	AGG-3	208.	AGO-3		168.						

*Prices include one overload relay thermal unit per relay. Deduct \$1.50 each if thermal units are omitted. Select thermal units from Table 9 on Page 224.

BIMETALLIC OVERLOAD RELAYS — FOR REPLACEMENT ON CLASS 8536 TYPES B — G STARTERS

Class 8536 Starter			Class 9065 Overload Relay				
No. Poles	Size	Type	L.H. Type	R.H. Type	Price		
					With Thermal Units	Without Thermal Units	
2, 3 or 4 Pole†	0	B (Series A only)	ARO-1L	ARO-1R	\$6.00	\$4.50	
	1	C (Series A or B)	ARO-1L	ARO-1R	6.00	4.50	
	2	D (All)	ATO-1L	ATO-1R	8.00	6.50	
	3	E (All)	AUO-1L	AUO-1R	10.00	9.50	
	4	F (Series C only)	AFO-1L	AFO-1R	16.00	13.50	
	5	G (Series B only)	AGO-1L	AGO-1R	56.00	54.50	

† 3 and 4-pole starters use one L.H. and one R.H. relay. 2-pole starters use one L.H. relay only.

BIMETALLIC OVERLOAD RELAYS — FOR REPLACEMENT ON CLASS 8536 TYPE S STARTERS

Class 8536 Starter				Class 9065			
No. of Poles	Size	Type	Form	Type	Price		
					With Thermal Units	Without Thermal Units	
0, 1		S3, SC (Series A or B)	B	SDO-5B	\$15.50	\$11.00	
			B1	SDO-5B1	12.00	9.00	
			B2	SDO-5B2	13.50	9.00	
3 or 4	2	SD	B	SDO-9B	19.50	15.00	
			B1	SDO-9B1	16.00	13.00	
			B2	SDO-9B2	17.50	13.00	
	3	SE	B3	AUO-1L	10.00	8.50	

MELTING ALLOY OVERLOAD BREAKER

Overload breakers are similar to an overload relay except no magnetic contactor is required. The breaker contact can be used directly to interrupt power to small single phase and dc motors.

CLASS
9065

SINGLE POLE

250 VOLTS MAX.

Single Phase AC Ratings		DC Ratings		General Purpose Enclosure NEMA Type 1		Open Type	
Volts	Max. HP	Volts	Max. HP	Type	Price *	Type	Price *
115 230	1½ 3	115 230	1½ 3	B	\$25.	C	\$15.

*Prices include one overload relay thermal unit. Deduct \$1.50 if thermal unit is omitted. Select thermal unit from Table 4 on page 220.

ORDERING INFORMATION REQUIRED: 1. Class and type number of device.
2. Quantity and type number of thermal units.

EXTERNAL RESET MECHANISMS

A wide range of adjustment allows these reset mechanisms to be used with open type magnetic starters or Class 9065 overload relays of any size. Segmented reset rods extend 2¼" to 9½" behind the panel.

CLASS
9066

NEMA 1, 5, 12 RESET MECHANISMS‡

Description	Type	Price
With 1 Rod.	RA-1	\$ 4.
With 2 Rods.	RA-2	5.
With 3 Rods.	RA-3	6.

‡For NEMA 4 applications use the Type RA kit plus a Class 9001 Type KU-1 water-tight cap.

ORDERING INFORMATION REQUIRED — Class and type number



Class 9065
Type C Overload Breaker



Class 9066
Type RA-2



CONTROL CIRCUIT TRANSFORMERS

CLASS
9070

These control circuit transformers are specifically designed for industrial control applications, to provide good transformer regulation when high inrush currents are drawn.

25-50-60 HERTZ

STANDARD VOLTAGES^Δ

Continuous VA			Open Type		General Purpose Enclosure NEMA Type 1	
60 Hertz	50 Hertz	25 Hertz	Type	Price	Type	Price
50	35	...	EO-1	\$ 12.	EG-1	\$ 18.
100	70	50	EO-2	14.	EG-2	22.
150	120	75	EO-3	16.	EG-3	24.
300	240	150	EO-4	29.	EG-4	37.
500	400	200	EO-5	38.	EG-5	54.
750	500	350	EO-6	58.	EG-6	74.
1000	1000	500	EO-7	65.	EG-7	81.
1500	1500	750	EO-8	81.	EG-8	107.
2000	2000	1000	EO-9	112.	EG-9	138.

^Δ Prices apply only to transformers having the following standard voltage ratings (primary/secondary):

60 Hertz: 240-480/120, 230-460/115, 220-440/110, 600/120, 575/115, 550/110, 240-480/24.

50 Hertz: 230-460/115, 220-440/110, 575/115, 550/110.

25 Hertz: 230-460/115, 575/115, 230-460/24.

^Δ 50 hertz may be applied to 60 hertz transformer at reduced VA rating shown. Do not apply 25 hertz to transformer rated at 60 hertz. Windings of 25 hertz transformers differ from 60 and 50 hertz transformers.

SEPARATE FUSE BLOCKS†	30 A., 250 V. MAX.	Type	Price
Fuse block and Bracket Assembly for 1½" x 1½" Fuse		AP-1	\$ 3.
Fuse Block and Bracket Assembly for 1¼" x ¼" Fuse. ...		AP-2	3.

† Fuse block and bracket assembly mount on side of transformer. Types AP-1 and AP-2 suitable for use on Types EO-1 through EO-4 transformers only. Prices do not include fuses.

PRICES FOR ADDITIONS AND SPECIAL FEATURES	Form	Price Addition
Fuse block (30 A., 250 V.) mounted in transformer enclosure (NEMA Type 1 only. For open type transformer, Type EO-4 or smaller, order separate Class 9070, Type AP-1 or AP-2):		
One fuse block	F2	\$ 4.
Two fuse blocks	F3	8.
Non-standard single primary and/or single secondary voltage rating		5.
Non-standard dual voltage primary with any single voltage secondary rating		7.



Type EO-1 Transformer with Type AP-2 Fuse Block Installed



Type EO-1 Transformer with Type AP-1 Fuse Block Installed

TYPE GO TRANSFORMERS FOR CLASS 8538 AND 8539 TYPE S COMBINATION STARTERS*

STANDARD VOLTAGE TRANSFORMERS WITH FUSE BLOCK ELEVATOR KIT

Continuous VA		Open Type	
60 Hertz	50 Hertz	Type	Price
100	70	GO-2	\$20.
150	120	GO-3	25.
300	240	GO-4	40.

STANDARD VOLTAGE RATINGS

Prices apply only to transformers having the following standard voltage ratings (primary/secondary):

60 Hertz	50 Hertz
240-480/120, 230-460/115	230-460/115
220-440/110, 600/120, 575/115	220-440/110
550/110, 240-480/24	575/115, 550/110

Prices for Non-Standard Voltages	Price Addition
Non-standard single primary and/or single secondary voltage rating	\$ 5.00
Non-standard dual voltage primary rating	7.00

*For 8538 or 8539 Size 0 and 1, use 9070 EO-1 for standard capacity.

TYPE S — SIZE 3

Type	Price	Description
GFT-3	\$50.	To be used with Class 8502 and 8536 Type S Size 3 contactors and starters in NEMA 1, 4 and 12 enclosures.

ORDERING INFORMATION REQUIRED: 1—Class and type number of transformer. 2—VA rating, primary and secondary voltages and hertz. 3—If required, specify fuse block type or form number.

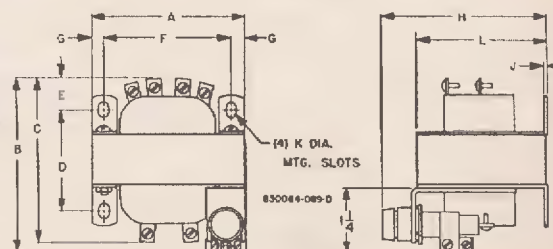
APPROXIMATE DIMENSIONS† (TYPE EO TRANSFORMERS)

Type	A	B★	C	D	E	F	G	H★	J	K	L
EO-1	3●	3½	3¼	2	5	2½	¼	3½	.083	1¼ x 2¼	2½
EO-2	3½●	4½	4	2¾	1½	2½	½	3½	.083	1¼ x 2¼	2¾
EO-3	3¾●	4½	4¾	2¾	1½	3½	¾	3¾	.083	1¼ x 2¼	3¼
EO-4	4½●	5½	5	3¼	1½	3¾	¾	4½	.083	1¼ x 2¼	3½
EO-5	5¼	...	6	4¾	1½	4¾	¾	5¼	1/8	5/8 x 1½	4¾
EO-6	5¼	...	7¾	5¾	1½	4¾	¾	5¼	3/8	5/8 x 1½	4¾
EO-7 Series B	6¾	...	6¾	4	1½	5½	2½	6¾	1/8	5/8 x 1½	6¾
EO-8	7½	...	8	5½	1½	5½	1½	7½	1/8	7/8 x 1½	6¾
EO-9	7½	...	9½	5¾	1½	5½	1½	7½	1/8	7/8 x 1½	7

● Add 1¾" to dimension "A" if Type AP-1 fuse block used.

★ Type AP-2 fuse block shown. Use dimension "C" and "L" if Type AP-1 used.

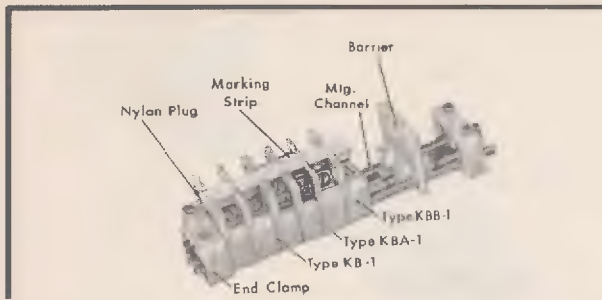
† Dimensions shown only apply to transformers having standard voltage ratings.



TERMINAL BLOCKS

300 VOLTS — CHANNEL AND DIRECT MOUNTED TYPE

TERMINAL BLOCK KITS — FOR CUSTOMER ASSEMBLY



Each customer assembly consists of:

1. Required number of Type K— sections.
2. Parts included in Type K-3 or K-4 assembly kit.
3. If channel mounted, required length of mounting channel.

CLASS
9080

Description	Type	Price Each	Standard Pack Quantity
Nylon Terminal Section with Pressure Wire Connectors Wire Size #22 to #14	KB-1	\$.34	50 ★
Nylon Terminal Section with Flat Terminal Wire Size #22 to #14	KBB-1	.24	50 ★
Nylon Terminal Section with Solderless Box Lug With Pressure Plate Wire Size #22 to #14	KBA-1	.28	50 ★
Nylon Terminal Section with Solderless Box Lug Without Pressure Plate Wire Size #22 to #14	KBC-1	.28	50 ★

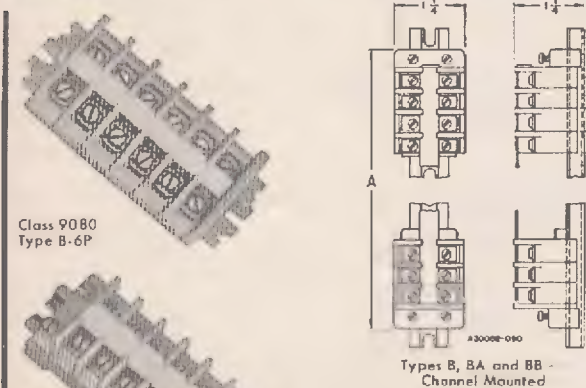
† Must be cut to length required for number of circuits on block.
 * Includes miscellaneous parts required in assembly of complete terminal.
 ★ Orders must specify quantity listed or multiple of quantity listed.

Description	Type	Price Each	Std. Pack Qty.
Mounting Channel	182B-C22-		
	2 7/8"	X2	\$.10
	4 1/8"	X4	.15
	6 1/2"	X77	.20
	9"	X84	.25
	11 5/8"	X16	.30
	16 3/8"	X102	.45
	48"	X38	1.30
White Marking Strip — 50" Length †	182B-D20-X1	.20	1
End clamp assembly	31047-013-50	.20	100
Barrier	31047-003-01	.05	50
Nylon Plug (holds in marking strip)	31047-005-01	.03	50
Adhesive Backed Marking Strip Sheet, 27 Strips — 11" Length	MS-2	.50	1
Barrier—Used Between 300 and 600 Volt Blocks	31047-034-01	.60	1
Jumper for Type KBA-1 and KBC-1 Sections	2 Circuit	JBA-2	.07
	6 Circuit	JBA-6	.15
Separable Connector For Use with KBA-1 and KBC-1 Sections	6 Circuit	SBA-6	2.10
	12 Circuit	SBA-12	4.20
Assembly Kit for Direct Mounting Includes: 1 — Nylon Barrier No. 31047-003-01 1 — 24 Circuit Marking Strip No. 31047-017-27 1 — Nylon Plug No. 31047-005-01	K-4 *	.50	1
Assembly Kit for Channel Mounting Includes: 2 — Nylon End Clamps No. 31047-013-50 Plus all parts included with K-4 kit listed above.	K-3 *	1.00	1

ASSEMBLED TERMINAL BLOCKS

No. of Circuits	DIRECT MOUNTED						CHANNEL MOUNTED					
	Type KB-1 Sections Pressure Wire Conn. Wire #22 to #14		Type KBB-1 Sections Flat Terminals Wire #22 to #14		Type KBA-1 Sections Solderless Box Lugs Wire #22 to #14		Type KB-1 Sections Pressure Wire Conn. Wire #22 to #14		Type KBB-1 Sections Flat Terminals Wire #22 to #14		Type KBA-1 Sections Solderless Box Lugs Wire #22 to #14	
	Type	Price	Type	Price	Type	Price	Type	Price	Type	Price	Type	Price
2	B-2P	\$ 1.30	BB-2P	\$1.10	BA-2P	\$ 1.20	B-2	\$ 1.80	BB-2	\$ 1.60	BA-2	\$ 1.70
3	B-3P	1.60	BB-3P	1.30	BA-3P	1.40	B-3	2.20	BB-3	1.90	BA-3	2.00
6	B-6P	2.60	BB-6P	2.00	BA-6P	2.30	B-6	3.20	BB-6	2.60	BA-6	2.80
12	B-12P	4.70	BB-12P	3.50	BA-12P	4.00	B-12	5.30	BB-12	4.10	BA-12	4.60
18	B-18P	6.70	BB-18P	4.90	BA-18P	5.60	B-18	7.40	BB-18	5.60	BA-18	6.30
24	B-24P	8.80	BB-24P	6.40	BA-24P	7.30	B-24	9.50	BB-24	7.10	BA-24	8.10
36	B-36P	12.80	BB-36P	9.20	BA-36P	10.70	B-36	13.70	BB-36	10.10	BA-36	10.60

★ Standard Stock Item.



Class 9080
Type BB-6

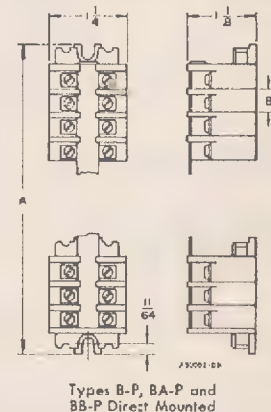
APPROXIMATE DIMENSIONS

TABLE 1

Type	Dimension B
KB-1 and KBB-1	1 1/2 (.406)
KBA-1 and KBC-1	3/8 (.375)

ORDERING INFORMATION REQUIRED

See Page 207



CHANNEL MOUNTED

Dim. A = (Dim. B × N) * + 1 1/16" (or + .938")
 Mounting Dim. = Dim. A + 5/16" (or + .312")
 N = Number of circuits.
 * When different sections are intermixed, repeat (Dim. B × N) for each type used and add results. Mounting Channel has slots for #8 mounting screws.

DIRECT MOUNTED

Dim. A = (Dim. B × N) * + 2 3/8" (or + .781")
 Mounting Dim. = Dim. A — 1 1/2" (or — .344")
 N = Number of circuits.
 * When different sections are intermixed, repeat (Dim. B × N) for each type used and add results. Terminal block base has slot for #8 mounting screw.



TERMINAL BLOCKS


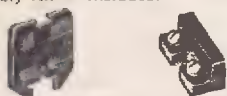




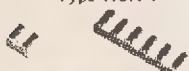
600 VOLTS — CHANNEL MOUNTED TYPE

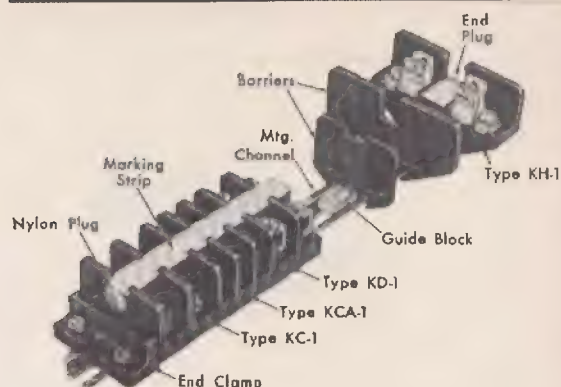
(For Factory Assembled Blocks and Dimensions, See Page 207)

Each customer assembly consists of:

1. Required number of Type K— sections. Sections can be intermixed on same track.
2. Parts included in Type K-1 assembly kit (and KH-2 kit if Type KE-1, KF-1 or KH-1 used).
3. Required length of mounting channel.

CLASS
9080

Description		Type	Price Each	Std. Pack Qty.	
	Mounting Channel	†† 1828-C22-X3	\$.10	1	
	Std. Lengths	X7			
	3 1/2"	X12			
	6"	X18			
	9 1/4"	X24			
	12 3/4"	X36			
	15 3/4"	X39			
	24 1/4"	X38			
	29 1/4"				
	48"				
White marking strip — 50" Length		1828-C23-X100	\$.20	1	
Adhesive backed marking strip sheet — 20 strips — 11" length		MS-1	\$.50	1	
End Clamp Assembly		1828-D57-G1	\$.20	100	
Barrier		1828-C18-X1	\$.05	50	
Barrier (For KE-1, KF-1 and KH-1)		1828-C28-X1	\$.25	50	
Barrier — Used between 300 and 600 Volt Blocks		31047-034-01	\$.60	1	
Guide Blocks		1828-D62-X1	\$.03	100	
Nylon Plug (Holds in Marking Strip)		1828-D71-X1	\$.02	100	
End Plug (For Types KF-1 and KH-1)		1828-L20-X1	\$.10	50	
Assembly Kit — Includes:					
		K-1	\$ 1.20	1	
1 — Barrier No. 1828-C18-X1 2 — End Clamps No. 1828-D57-G1					
					
1-24 Circuit Marking Strip ▲ No. 1828-C23-X46 2-Nylon Plugs No. 1828-D71-X1 2-Guide Blocks □ No. 1828-D62-X1					
Kit Includes:					
		KH-2 **	\$.45	1	
1 — Marker Strip End Plug No. 1828-L20-X1 1 — Barrier No. 1828-C28-X1					
Separable connector for use with: Types KC-1 KCB-1 and STB-2		No. of Ckts.			
		6	SC-6	\$ 2.10	1
		12	SC-12	4.20	1
Type KCA-1					
		6	SCA-6	\$ 2.10	1
		12	SCA-12	4.20	1
Jumpers for Use with: Type KCA-1					
		2	JCA-2	\$.07	100
		6	JCA-6	.15	50



Description	Type	Price Each	Std. Pack Qty.
Terminal Block Section with Pressure Wire Connectors. Wire #10 and smaller	KC-1	\$.21	50 ★
Terminal Block Section with Flat Terminal. Wire #10 and smaller	KCB-1	\$.21	50 ★
Terminal Block Section with Solderless Box Lug. Wire #8 and smaller	KCA-1	\$.29	50 ★
Terminal Block Section with Solderless Box Lug. Wire #14-4	KD-1	\$.51	50 ★
Terminal Block Section with Solderless Box Lug. Wire #10-0	KE-1	\$ 1.26	1
Fusible Terminal Block Section with Pressure Wire Connector. Wire #10 and smaller	KH-1	\$.90 ††	1
Terminal Block Section with "Strip-On" Connectors on Both Sides of Block. Wire #18-14 ‡	KCS-1	\$.35	50 ★
Terminal Block Section with "Strip-On" Connector on One Side of Block and Pressure Wire Connector on the Other. Wire #10 and smaller ‡	KCPS-1	\$.40	50 ★
Terminal Block Section with Tin Plated Terminals for Use with Aluminum Wire. Wire #10 and smaller	KCBT-1	\$.28	50 ★
Terminal Block Section with Disconnect Switch and Flat Terminal. Wire #10 and smaller	KF-1	\$ 2.30	1

★Orders must specify quantity listed or multiples of quantity listed.

††See Page 207 for determining length of mounting channel required.

‡‡Includes parts required in addition to Type K-1 kit when Type KE-1 or KH-1 sections used. End plug used only on KF-1 and KH-1.

‡‡‡Price does not include fuses. Will accept any 1 1/2" dia. by 1 1/2" long ferrule type fuse.

□When terminal block length exceeds 12 inches, guide blocks maintain terminal block rigidity.

‡For use with .250 inch wide "Strip-On" receptacles such as Burndy's "Fingrip" or Amp's "Fastons". In general, commercially available receptacles accept #18-14 wire.

Receptacles not furnished by Square D Company.

▲30 circuit when used with Type KCA-1 and 20 circuit with KH-1, KE-1 or KF-1.

ORDERING INFORMATION REQUIRED — See Page 207.









TERMINAL BLOCKS

ASSEMBLED TERMINAL BLOCKS

600 VOLT CHANNEL MOUNTED TYPE FOR POWER OR CONTROL CIRCUITS

9080

Number of Circuits												
	Terminal Block With Pressure Wire Connectors (Type KC-1 Sections) Wire #10 and Smaller		Terminal Block With Flat Terminals (Type KCB-1 Sections) Wire #10 and Smaller		Terminal Block With Solderless Box Lugs (Type KCA-1 Sections) Wire #8 and Smaller		Terminal Block With Solderless Box Lugs (Type KD-1 Sections) Wire #14-4		Terminal Block With Solderless Box Lugs (Type KE-1 Sections) Wire #10-6		Fusible Terminal Block with Pressure Wire Connector (Type KH-1 Sections) Wire #10 and Smaller	
	Type	Price	Type	Price	Type	Price	Type	Price	Type	Price	Type	Price ± ±
2	C-2●	\$1.80	CB-2●	\$1.80	CA-2●	\$ 1.90	D-2●	\$ 2.40	E-2●	\$ 4.20	H-2●	\$ 3.50
3	C-3●	2.00	CB-3●	2.00	CA-3●	2.20	D-3●	2.90	E-3●	5.50	H-3●	4.40
4	C-4●	2.20	CB-4●	2.20	CA-4●	2.50	D-4●	3.40	E-4●	6.80	H-4●	5.30
5	C-5●	2.50	CB-5●	2.50	CA-5●	2.80	D-5●	4.00	E-5●	8.10	H-5●	6.30
6	C-6●	2.70	CB-6●	2.70	CA-6●	3.10	D-6●	4.50	E-6●	9.40	H-6●	7.20
7	C-7●	2.90	CB-7●	2.90	CA-7●	3.40	D-7●	5.00	E-7●	10.70	H-7●	8.10
8	C-8●	3.20	CB-8●	3.20	CA-8●	3.70	D-8●	5.60	E-8●	12.00	H-8●	9.10
9	C-9●	3.40	CB-9●	3.40	CA-9●	4.00	D-9●	6.10	E-9●	13.30	H-9●	10.00
10	C-10●	3.70	CB-10●	3.70	CA-10●	4.40	D-10●	6.70	E-10●	14.60	H-10●	11.00
11	C-11●	3.90	CB-11●	3.90	CA-11●	4.70	D-11●	7.20	E-11●	15.80	H-11●	11.90
12	C-12●	4.10	CB-12●	4.10	CA-12●	5.00	D-12●	7.70	E-12●	17.10	H-12●	12.80
14	C-14●	4.60	CB-14●	4.60	CA-14●	5.60	D-14●	8.80	E-14●	19.70	H-14●	14.70
15	C-15●	4.80	CB-15●	4.80	CA-15●	5.90	D-15●	9.30	E-15●	21.00	H-15●	15.60
16	C-16●	5.10	CB-16●	5.10	CA-16●	6.20	D-16●	9.90	E-16●	22.30	H-16●	16.60
18	C-18●	5.50	CB-18●	5.50	CA-18●	6.80	D-18●	10.80	E-18●	24.90	H-18●	18.40
24	C-24●	6.60	CB-24●	6.60	CA-24●	8.30	D-24●	14.10	E-24●	32.70	H-24●	24.00
28	C-28●	7.60	CB-28●	7.90	CA-28●	9.80	D-28●	16.30	E-28●	37.90	H-28●	27.80
36	C-36●	9.80	CB-36●	9.80	CA-36●	11.00	D-36●	20.60	E-36●	48.20	H-36●	35.30

● Standard stock item. ± ± Price does not include fuses.

DIMENSIONS OF CHANNEL MOUNTED TERMINAL BLOCKS

APPROXIMATE DIMENSIONS

TABLE 1

Type	Dimension B
KC-1, KCB-1, KCBT-1, KCS-1, KCPS-1 & KD-1	5/8"
KCA-1	2 3/4"
KE-1, KF-1 & KH-1	3/4"

TABLE 2

Mounting Channel Identification	Std. Lengths
1828-C22-X3	3 1/2"
1828-C22-X7	6"
1828-C22-X12	9 1/2"
1828-C22-X18	12 3/4"
1828-C22-X24	16 1/2"
1828-C22-X36	24 1/2"
1828-C22-X39	29 1/2"
1828-C22-X38	48"

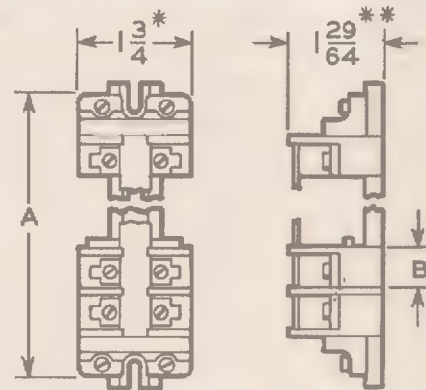
SELECTION OF MOUNTING CHANNEL AND MOUNTING DIMENSIONS

1. Determine terminal block length dimension A as follows:

- Locate dimension B from table 1 and multiply times the number of sections to be used. Repeat for each type of section to be used and add results.
- Add 1 3/8" to result of step 1 a. to allow for one barrier and two end clamps. This total equals terminal block length dimension A. Channel mounting dimensions may be figured as dimension A less 1/8".

2. Select mounting channel from Table 2 equal to or larger than dimension A.

Note: Mounting dimension of factory assembled block may vary slightly from results above due to difference in actual length of channel used.



*Dimension is 2 7/8" for Types E, F and H.

**Dimension is 1 3/4" for Type E, F and H.

ORDERING INFORMATION REQUIRED

- Class and type number or part number.
- Specify quantity. Prices apply only when quantities listed or multiple of quantities listed are ordered.

Class 9080
Type CA-6

Class 9080
Type C-8



SCHEDULE DS-5 DISCOUNT

PAGE 207

TERMINAL BLOCKS

CLASS
9080

TERMINAL BLOCK KITS 600 VOLT STUD MOUNTED KIT

Description	Type	Price	Standard Pack Qty
Terminal Block Section with Pressure Wire Connector Wire #10 and Smaller.	STB-2	\$.26	50 ★
Terminal Block Section with Solderless Box Lugs Wire #14-4.	STB-3	.71	50 ★
Stud for 3 Circuit Block.	300-D20-X3	.10	1
Stud for 4 Circuit Block.	300-D20-X4	.12	1
Stud for 6 Circuit Block.	300-D20-X6	.15	1
Stud for 8 Circuit Block.	300-D20-X8	.18	1
Stud for 10 Circuit Block.	300-D20-X10	.21	1
Stud for 12 Circuit Block.	300-D20-X12	.25	1
Stud for 18 Circuit Block.	300-D20-X18	.35	1
Stud for 24 Circuit Block.	300-D20-X24	.45	1
White Marking Strip—50" Length †	1828-D20-X1	.20	1
Assembly Kit	STB-1 *	.75	1

★ Orders must specify quantity listed or multiple of quantity listed.

* Includes miscellaneous parts required in assembly of complete terminal block.

† Must be cut to length required for number of circuits on block.

ORDERING INFORMATION REQUIRED

Order by class and type number.

SCHEDULE DS-5 DISCOUNT

OPERATING MECHANISMS

CLASS
9421

FOR DISCONNECT SWITCHES AND OPERATING MECHANISMS DOOR MOUNTED, VARIABLE DEPTH CONSTRUCTION

DISCONNECT SWITCHES — Kit Contains Switch and Mechanism, All Mounting Hardware, and External Operating Handle — NEMA 12

600 V. AC MAX.

250 V. DC MAX.

Disconnect Switch Size	Mounting + Depth Range Min.-Max.	Maximum HP Ratings▲				Fuse Clip Rating (Amperes)Ⓢ		3-Pole		4-Pole	
		AC Polyphase			DC Using 2-Poles 250 V.						
		208-200 V.	440-480 V.	550-600 V.							
30 Amp.	6 3/8-14	7 1/2	15	20	5	250 V.	600 V.	Type	Price	Type	Price
						Non-Fusible		G100C	\$ 30.	G200C	\$ 54.
						30	—	G102C	33.	G202C	58.
						60	30	G103C	35.	G203C	61.
						—	60	G115C	37.	G215C	63.
						Non-Fusible		G101C	39.	G201C	67.
						60	30	G108C	44.	G208C	74.
						60	60	G109C	46.	G209C	76.
						100	100	G105C	55.	G205C	88.
						Non-Fusible		G109C	64.	G210C	103.
						100	100	G111C	73.	G212C	115.
						200	200	G112C	96.	G213C	146.
						Non-Fusible		G118C	93.	G211C	140.
						200	200	G113C	110.	G214C	163.
						400	400	G114C	159.	G215C	228.

† Depth measured from switch mounting surface to outside surface of enclosure door (inches).

Ⓢ Fuse clips are non-interchangeable type.

CIRCUIT BREAKER OPERATING MECHANISMS — Kit contains Mechanism and Mounting Hardware, and External Operating Handle — NEMA 12.

IMPORTANT: Circuit Breaker Operating Mechanisms **DO NOT** include the Circuit Breaker. Open Type Breakers must be ordered from Pages 45 & 46.

Use With			Operating Mechanism		
Breaker or Interrupter Type	No. of Poles	Fuse Stub (Amps.)	Mounting Depth Range† Min.-Max.	Type	Price
FAL or FAH	2-3	100	6 1/8-14	FN-1	\$15.
KAL or KAH	2-3	200	6 1/2-14	FP-1	18.
LAL or LAH	1	400	7 3/8-14	FR-1	21.
MAL or MAH	2-3	1000	8 3/8-14	FT-1	23.

† Depth measured from breaker mounting surface to outside of enclosure door (inches).

SCHEDULE DS-1 DISCOUNT

ASSEMBLED TERMINAL BLOCKS 600 VOLT STUD MOUNTED TYPE

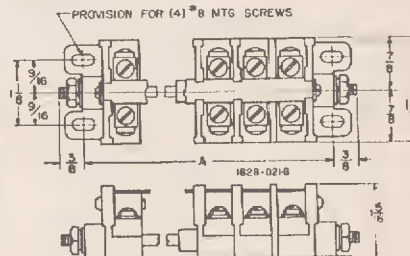
Number of Circuits	Pressure Wire Connector Wire #10 and Smaller		Solderless Box Lug Wire #14-4	
	Type	Price	Type	Price
3	S-3	\$1.70	TB-3	\$3.10
6	S-6	2.60	TB-6	5.30
8	S-8	3.10	TB-8	6.70
10	S-10	3.70	TB-10	8.20
12	S-12	4.30	TB-12	9.70
18	S-18	6.00		
24	S-24	7.70		



Class 9080 Type S6

DIMENSIONS FOR CLASS 9080 TYPES "S" AND TB TERMINAL BLOCKS

No. of Term	Dim A	No. of Term	Dim A	No. of Term	Dim A
2	2	10	7	18	12
3	2 1/2	11	7 1/2	19	12 1/2
4	3 1/4	12	8 1/4	20	13 1/4
5	3 3/4	13	8 3/4	21	13 3/4
6	4 1/2	14	9 1/2	22	14 1/2
7	5 1/8	15	10 1/8	23	15 1/8
8	5 3/4	16	10 3/4	24	15 3/4
9	6 1/2	17	11 1/2		



ASSEMBLED TERMINAL BLOCKS — 600 VOLTS UNIT CONSTRUCTION TYPE

No. of Circuits	Solderless Box Lugs Wire #8-4		Solder Lugs Wire #8-4		Solderless Box Lugs Wire #10-0		Solder Lugs Wire #10-0		Solderless Box Lugs Wire #6-250 MCM Cable	
	Type	Price	Type	Price	Type	Price	Type	Price	Type	Price
2	T-3	\$4.50	T-31	\$4.50	U-3	\$6.50	U-31	\$4.80	V-2	\$7.00
3					U-32	4.80			V-3	9.10



Type G106C
(Fuses Not Included)

▲ NOTE: Horsepower ratings refer to rating of switch only. Ratings given apply to 3-pole switches, and also 4-pole switches when used on 2-phase, four wire systems.



Type FN-1
(Breaker Not Included)



OPERATING MECHANISMS FOR DISCONNECT SWITCHES AND CIRCUIT BREAKERS

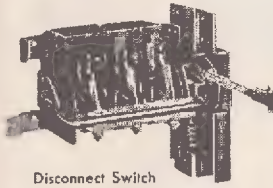
FLANGE MOUNTED, VARIABLE DEPTH CONSTRUCTION

Designed for installation in custom built control enclosures where main or branch circuit protective devices are required. All disconnect switches and circuit breaker operating mechanisms are suitable for either right- or left-hand flange mounting, convertible on the job.

CLASS
9422



Handle Mechanism



Disconnect Switch

LINE LUG DATA

Disconnect Switch Size	Wire Size Minimum Maximum
30 Ampere	#14-#2 CU, #10-#2 AL
60 Ampere	#14-#2 CU, #10-#2 AL
100 Ampere	#10-#00 CU, #6-#00 AL
200 Ampere	#6-300 MCM, CU or AL

UNIVERSAL HANDLE MECHANISMS

One Required for Each Disconnect Switch or Circuit Breaker Operating Mechanism listed below. Will mount on either the right or left hand flange, or center channel of multi-door enclosure.

Description	Type	Price
Handle Mechanism for NEMA 1, 4 Sheet Steel, or 12 Enclosure	A1	\$10.00
Handle Mechanism for NEMA 4 or 12 Stainless Steel Enclosure All external parts are either stainless steel or a chrome plated non-ferrous die casting.	A2	18.00

DISCONNECT SWITCHES

Disconnect switch kits include the operating mechanism and disconnect switch completely assembled plus the required mounting hardware.

600 V. MAX. AC

250 V. MAX. DC

Disconnect Switch Size	Mounting Depth Range Min.-Max.	Maximum HP Ratings▲				Fuse Clip Rating (Amperes)		Switch and Operating Mechanism Only DOES NOT include Universal Handle Mechanism	
		AC Polyphase			DC Using 2 Poles 250 V.			Type	Price
		208-220 V.	440-480 V.	550-600 V.		250 V.	600 V.		
30 Amp.	5 3/8-18 1/4	7 1/2	15	20	5	Non-Fusible		RC-1	\$ 23.
						30	30	RC-2	26.
						60	60	RC-3	28.
60 Amp.	6 1/8-18 1/4	15	30	40	10	Non-Fusible		RD-1	27.
						60	30	RD-2	31.
						100	60	RD-3	34.
100 Amp.	7 5/8-18 3/4	30	50	50	20	Non-Fusible		RE-1	40.
						100	100	RE-2	55.
						200	200	RE-3	72.
200 Amp.	9 1/8-19 1/4	50	100	100	40	Non-Fusible		RF-1	78.
						200	200	RF-2	95.
						400	400	RF-3	144.

▲Horsepower ratings refer to rating of switch only.

MODIFICATIONS

Electrical Interlocks Class 9999 Optional Accessory for use with Disconnect Switches. See Page 215 for Prices.

For Use on: Disc. Sw. Amp. Rating	Single Pole Interlock Type	Two Pole Interlock Type
30 or 60	9999 R6	9999 R7
100 or 200	9999 R8	9999 R9

DISCONNECT SWITCHES WITH INTERCHANGEABLE FUSE CLIPS

Disconnect switches with interchangeable fuse clips have a separate lower fuse block which is mounted in one location for each size switch. This permits installation of fuse clips for different ampere ratings and voltage spacings. Fuse clips are not included — order separately from page 216.

Disconnect Switch Size	Switch and Operating Mechanism Only — DOES NOT Include Universal Handle Mechanism	
	Type	Price
30	RC-5	\$ 30.
60	RD-5	40.
100	RE-4	56.
200	RF-4	100.

CIRCUIT BREAKER OPERATING MECHANISMS

Circuit Breaker or Interrupter Type	Use With		Operating Mechanism	
	No. of Poles	Frame Size (Amps.)	Mounting Depth Range Min.-Max.	Operating Mechanism Only — DOES NOT Include Universal Handle Mech.
				Type Price
FAL or FAH	2-3	100	5 3/8-17 3/4	RN-1 \$ 8.
KAL or KAH	2-3	225	6 3/8-17 3/4	RP-1 8.
LAL or LAH	2-3	400	7 1/8-18 3/4	RR-1 23.
MAL or MAH	2-3	1000	7 5/8-18 3/4	RT-1 23.

IMPORTANT: Circuit Breaker Operating Mechanisms **DO NOT** include the Circuit Breaker Open Type Breakers must be ordered from Pages 45 and 46.

Terminal Wire Size Information and Trip Setting Data is given on Pages 45, 46, and 47.

MODIFICATIONS

Electrical Interlocks — Class 9999 — Optional Accessory for use with Circuit Breaker Operating Mechanisms. See Page 215 for prices.

Description	Class	Type
Single Pole, Double Throw.	9999	R26
Double Pole, Double Throw.	9999	R27

CHANNEL/FLANGE SUPPORT KIT

Recommended for use with 30 and 60 Amp. Disconnect Switches and FA and KA Circuit Breaker Mechanisms when Mounted on Center Channel of Multi-Door Enclosure or when Extra Rigidity for the Flange is Required. Furnished as Standard with 100 and 200 Amp. Disconnect Switches and LA and MA Breaker Mechanisms.

Type	Price
C-1	\$3.00

Ⓜ Mounting depth is measured from the mounting surface of disconnect device to outside surface of enclosure flange.

BRACKET MOUNTED DISCONNECT DEVICES

Disconnect Switch Size	Maximum HP Ratings				Fuse Clip Rating		Right Hand Flange Mtg.	
	220-240 V.	440-480 V.	550-600 V.	DC Using 2 Poles	Amps.	Volt.	Type	Price
30 Amp.	7 1/2	15	20	5	Non-Fusible		BC-1	\$33.
					30	600	CC-4	28.
					60	600	CC-4	40.
60 Amp.	15	30	50	10	Non-Fusible		BC-1	37.
					60	250	CD-2	41.
					30	600	CD-6	41.
					60	600	CD-3	44.

A complete line is available. For disconnect switches not listed or for circuit breaker versions consult General Industry Control Catalog or your local Square D Field Office.

Bracket Mounted Disconnect Switch

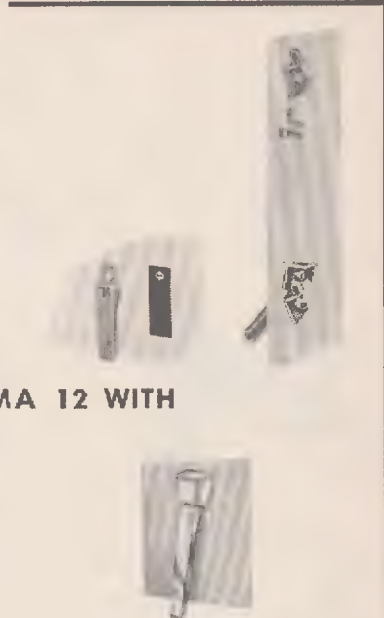


DOOR CLOSING MECHANISMS & ENCLOSURE ACCESSORIES

FOR SINGLE DOOR ENCLOSURES — NEMA 4 OR 12 WITH 60" HIGH MAXIMUM DOOR OPENING

CLASS 9423 The Class 9423 door closing mechanisms listed are designed for use on small single door control enclosures. They are designed to be used in conjunction with Class 9422 flange mounted disconnect switches and circuit breaker operating mechanisms. The Types M3, M4 and M4L, when used on properly designed and gasketed NEMA 12 Industrial Use enclosures will meet JIC standards.

Description	Handle Length	Use On (Enclosure Type)	Type	Price
Two point door closing mechanism for use on enclosures with DOORS HINGED ON LEFT HAND SIDE	4"	NEMA 4 and 12 Sheet Steel	M4	\$16.00
	4"	NEMA 4 and 12 Stainless Steel	M24	21.00
	6"	NEMA 4 and 12 Sheet Steel	M9	17.00
Two point door closing mechanism for use on enclosures with DOORS HINGED ON RIGHT HAND SIDE	4"	NEMA 4 and 12 Sheet Steel	M4L	16.00
	4"	NEMA 4 and 12 Stainless Steel	M24L	21.00
	6"	NEMA 4 and 12 Sheet Steel	M9L	17.00
Third roller latch kit for three point locking. Used where 3 point locking is desired or where door opening may slightly exceed 40"		NEMA 4 and 12 Sheet Steel	M3	3.50
		NEMA 4 and 12 Stainless Steel	M23	4.00



FOR SINGLE OR MULTI-DOOR ENCLOSURES — NEMA 12 WITH 40" TO 91" HIGH DOOR OPENING

A complete line of vault handle-door closing mechanisms is also available. Vault handles are available in both 6 in. and 8 in. lengths. Interlocking kits are also available which are designed to interlock the disconnect device with the vault handle. In addition, kits are available for interlocking auxiliary doors with the master door on multi-door enclosures.

Consult the General Industry Control Catalog or your local Square D field office.

STARTER AND RELAY ENCLOSURES

NEMA TYPE 4 AND 12 ENCLOSURES FOR CLASSES 8536, 8736, AND 8810 TYPE S STARTERS

For Use With		Starter NEMA Size	Enclosure Classification			
Class	Types (All Pole Arrangements)		Water-tight Stainless Steel NEMA Type 4		Dust-tight Industrial Use NEMA Type 12	
			Class 9991 Type	Price	Class 9991 Type	Price
8536★	SBO & SCO	0 & 1	SCW-1	\$ 38.	SCA-1	\$14.
	SDO	2	SDW-1	82.	SDA-1	32.
	SEO	3	SEW-1	122.	SEA-1	46.
8736	SCO	1	SCW-2	70.	SCA-2	24.
	SDO	2	SDW-2	120.	SDA-2	48.
8810	SBO & SCO	0 & 1	SCW-3	100.	SCA-3	37.

All enclosures include an external reset, mounting screws and instruction sheets; and will accept the standard open Type S starters.

Class 9991
NEMA type 4
Enclosure



★ Flush mount. NEMA 1 enclosures are available as enclosures only for Class 8536 devices. For more information contact your local Square D field office.

NEMA TYPE 1 ENCLOSURES FOR CLASSES 7001, 8501, 8508 AND 9050 RELAYS AND TIMERS

Open Type Relays which Universal Enclosures will Accept		Universal Enclosure Class 8501	
Class	Type	Type	Price
8501	CO-1, 2, 3, 4, 5, 12, 13, 14	UE-1	\$2.50
7001	DO-20, 02, 22, 40, 42 PO-1, 2, 3, 4, 6, 8		
8501	DO-20, 02, 22, 40, 42 PO-1, 2, 3, 4, 6, 8 GO-(2, 3 and 4 pole) GDO-(2, 3 and 4 pole)		
9050	AO-1E, AO-1D, HO-1E, HO-1D	UE-3	3.00
7001	DO-44, 60, 62, 64, 80, 82 GO-(2, 3, 4 and 6 pole) PO-(2, 3, 4 and 5 pole)		
8501	DO-44, 60, 62, 64, 80, 82 AO-(2, 3, 4 and 6 pole) BO-(2, 3, 4 and 5 pole) HO-(2, 3, 4, 6 and 8 pole)		
8501	GO-(6 and 8 pole) GDO-(6 and 8 pole) GO-(0-4 pole with attachment) GDO-(0-4 pole with attachment)	UE-4	3.00
8501	BHO-(6 and 8 pole)	UE-5	3.00
8508	AO-(2, 3 and 4 pole) BHO-(2, 3 and 4 pole)		

The Universal Enclosure is a sheet steel, NEMA 1, General Purpose enclosure. It is available in five sizes to accommodate various types of open type relays and timers. The back plate of the enclosure is provided with multiple knockouts in various locations for mounting the different devices. An Instruction Sheet is included to show which knockouts are used with each relay. Self tapping relay mounting screws are included with each enclosure.

Class 8501, Type UE-3



CONTACT PARTS KITS & MAGNET COILS

TYPE S

**AC MAGNET COILS
FOR TYPE S CONTACTORS & STARTERS**

COILS



AC Magnet Coil

Devices Using Coil			Coil Specification Number	SUFFIX NUMBERS (Complete Part Number of Coil Consists of Specification Number Followed by Suffix Number as 31041-400-20)								Price
Size	Type	Poles		24 Volts 60 Hertz	120 V., 60 Hz. 110 V., 55 Hz.	208 Volts 60 Hertz	220 Volts 60 Hertz	240 V., 60 Hz. 220 V., 50 Hz.	277 Volts 60 Hertz	480 V., 60 Hz. 440 V., 50 Hz.	600 V., 60 Hz. 550 V., 50 Hz.	
0, 1 & 1P	SB & SC	1-5	31041-400	20	42	48	†	51	52	60	62	\$ 7.
2	SD	2-3	31063-400	16	38	44	†	47	49	57	60	9.
2	SD	4 & 5	31063-400	16	38	44	†	47	49	57	60	9.
3	SE	2 & 3	31074-400	16	38	44	†	47	49	57	60	18.

† For 220 volt and 230 volt applications use the 240 volt coil.

115/230 volt, 60 hertz dual voltage coils:
 Sizes 0, 1 and 1P (1-5 Pole) — 31041-402-01 \$10.
 Size 2 (2 and 3 pole) — 31063-411-01 13.
 Size 2 (4 and 5 pole) — 31063-402-01 13.
 Size 3 (2 and 3 pole) — 31074-402-01 22.

AC MAGNET COILS FOR AC MAGNETIC CONTACTORS, STARTERS, RELAYS & TIMERS

*Devices Using Coil			Coil Specification Number	SUFFIX NUMBERS (Complete Part Number of Coil Consists of Specification Number Followed by Suffix Number as 2183-S44-Q23A)								Price
Size	Type	Poles		24 Volts 60 Hertz	120 V., 60 Hz. 110 V., 55 Hz.	208 Volts 60 Hertz	220 Volts 60 Hertz	240 V., 60 Hz. 220 V., 50 Hz.	277 Volts 60 Hertz	480 V., 60 Hz. 440 V., 50 Hz.	600 V., 60 Hz. 550 V., 50 Hz.	
Relay	A	All	2183-S44	Q23A	Q30B	Q33A	Q33A	Q33B	Q34A	Q36B	Q37B	\$ 6.00
	BH-BR	All	1861-S1	R22B	R30A	R32B	R32B	R33A	R33B	R36A	R37A	7.00
	C	All	4323-S1	W28A	W35B	W37B	W38A	W38B	W39A	W41B	.....	4.00
	D	2-4	2959-S1	W26A	W33A	W35B	W35B	W36A	W36B	W39A	W40A	8.00
	D	6-8	2959S-49	W24A	W31A	W33B	W33B	W34A	W34B	W37A	W38A	8.00
	F	2	31011-400	37	58	65	65	67	68	.....	.....	5.00
	H	All	31071-400	23	44	50	†	53	55	62	65	6.00
	G	All	31021-400	39	60	67	†	69	70	.....	.....	5.00
	P	All	2491-S8	P22B	P30A	P32B	P32B	P33A	P33B	P36A	P37A	8.00
	A	All	2959-S1	W26A	W33A	W35B	W35A	W36A	.....	W39A	W40A	8.00
Timer	B♦	All	1861-S1	R22B	R30A	R32B	R32B	R33A	.....	R36A	R37A	7.00
	B♦	All	31017-400	33	54	60	†	63	66	72	75	7.00
	A	All	2183-S44	Q23A	Q30B	Q33A	Q33A	Q33B	Q34A	Q36B	Q37B	6.00
CO★	A	All	2183-S44	Q23A	Q30B	Q33A	Q33A	Q33B	Q34A	Q36B	Q37B	6.00
00	A Series B & C	All	31012-400	23	43	49	†	52	55	61	65	6.00
U	B***	All	1861-S1	R22B	R30A	R32B	R32B	R33A	R33B	R36A	R37A	7.00
1	C▲	All	2936-S1	C19A	G21A	G29B	G29B	G30A	G30B	G33A	G34A	7.50
2	D	All	1707-S1	T13B	T21	T23A	T23A	T24A	T26B	T27B	.....	9.00
3	E	All	1775-S1	U11A	U18A	U20D	U20B	U21A	U21B	U24A	U25A	18.00
4	F Series C	2-4	1775-S1	U11A	U18A	U20D	†	U21A	U21B	U24A	U25A	18.00
4	F Series C	5	1775-S1	.....	U17B	U20	†	U20B	.....	U23B	U24B	18.00
5	G Series B	All	2938-S1	.....	F14A	F16D	†	F17A	F17B	F20A	F21A	25.00
Definite Purpose Contactor	H, J, K, L & M Series A	All	65108-400	19	400	48	48	49	51	580	610	7.00

*These coils may be used with the following ac magnetic controls: Classes 8501, 8502, 8508 (closing coil only), 8536, 8538, 8539, 8547, 8549, 8550, 8606 (Run Coil), 8650, 8651, 8702, 8736, 8738, 8739, 8747, 8810, 8811, 8812, 8910 and others.

† For 220 volt and 230 volt, 60 hertz applications use 240 volt coil.

***115/230 volt, 60 hertz, dual voltage coil is 1861-S14-G4.

▲115/230 volt, 60 hertz, dual voltage coil is 2936-S21-Q4.

★ For 8702 and 8736 only.

♦ Series B (double pole) and Series D (single pole).

● Series C (double pole) and Series E (single pole).

\$10.
13.

TYPE S

**CONTACT PARTS KITS
FOR TYPE S CONTACTORS & STARTERS**

**CLASS
9998**

Equipment to Be Serviced Class	NEMA Size	Description of Contact Kit	No. of Poles in Kit	Class 9998 Parts Kit Type No.	Price
Magnetic Starters & Contactors 8502 8536 8538 8539 8702 8736 8738 8739 8810	0	Replacement contacts and springs	3	SL-2	\$ 6.
	0	Replacement contacts and springs	4	SL-12	8.
	0 & 1	Replacement contacts and springs for power pole adder, same parts for N.O. or N.C. contacts	1	S-2	3.
	1	Replacement contacts and springs	3	SL-3	8.
	1	Replacement contacts and springs	4	SL-13	11.
	1P	Replacement contacts and springs	2	SL-5	10.
	2	Replacement contacts and springs	3	SL-4	18.
	2	Replacement contacts and springs	4	SL-14	24.
	2	Replacement contacts and springs for power pole adder, same parts for N.O. or N.C. contacts	1	SL-24	6.
	3	Replacement contacts	2	SL-6	22.
	3	Replacement contacts	3	SL-7	30.
	0-3	Replacement contact unit for melting alloy type overload relay. Standard N.C. contacts	.....	SO-1	3.
	0-3	Replacement contact unit for melting alloy type overload relay. N.O. alarm circuit contacts in addition to standard N.C. contacts. (Three point contacts)	.....	SO-2	7.

ORDERING INFORMATION REQUIRED — Order coils by part number and parts kits by class and type number.



SCHEDULE DS-14 DISCOUNT

PAGE 211

PARTS KITS FOR MOTOR CONTROL

CONTACT PARTS KITS

Class 9998 contact parts kits are available for servicing the more commonly used Square D relays, contactors, starters, manual compensators, and pressure, vacuum, and float switches. Each kit contains the necessary movable and stationary contacts, contact springs, and additional hardware required to service the devices listed below. When servicing devices having more poles than contained in the corresponding kit, it may be necessary to order an additional kit.

CLASS
9998

FOR STARTERS, CONTACTORS, AND RELAYS

Equipment to Be Serviced					Equipment to Be Serviced						
Class	Type	NEMA Size	No. of Poles in Kit	Class 9998 Parts Kit Type No.	Price	Class	Type	NEMA Size	No. of Poles in Kit	Class 9998 Parts Kit Type No.	Price
2205 2605 Manual Compensator	14 Contact Compensator (1 Kit required)						A-(Series B).....	00	3	AA-81	\$ 4.
	28 Contact Compensator (2 Kits required).....			PD-1	\$20.00		A-▲.....	00	3	QA-81 ★	5.
	B-(Kit includes Contact Block).....	M-0	2	BA-22	6.00		B-(Series A)	0	3	BA-81 ★	6.
	B-.....	M-0	3	BA-21	6.00			0	4	BA-82	8.
2510	B-(Kit includes Contact Block).....	M-0	3	BA-23	8.00	Magnetic Starters & Contactors	B-(Pre-Series A), R-	0	3	RA-81 ★	6.
Manual Starters	C-(Kit includes Contact Block).....	M-1	2	CA-22	8.00			0	4	RA-82	8.
	C-.....	M-1	3	CA-21	8.00		C-(Series A & B)	1	3	CA-81 ★	8.
	C-(Kit includes Contact Block).....	M-1	3	CA-23	10.00			1	4	CA-82	11.
Push Button Type	W5, W6, W16, W17, W23, W26, W27, W30, W32, W42, W43, W44, W45, W47, W50, W56, W58, W60 and W62.....	0		RA-21	7.00		C- & S-(Both Pre-Series A)	1	3	SA-81 ★	10.
	W10, W11, W20, W21, W25, W29, W31, W33, W36, W37, W38, W39, W49, W51, W57, W59, W61 and W63.....	1		SA-21	9.00			1	4	SA-82	13.
2510 Manual Starters Toggle Type	R.....	M-0	3	RA-22	7.00		D- T	2	3	TA-81 ★	18.
	S.....	M-1	3	SA-22	9.00			2	4	TA-82	24.
	A-(Series A & B), Q-(Pre-Series A)		3	QA-81 ★	6.00		E-, U	3	2	UA-83	22.
	A-(Series C), Q-(Series A).....		3	QA-82 ★	6.00			3	3	UA-81 ★	30.
	◆BH-, B-, R-(15 A. Relay).....		3	RA-81 ★	6.00			3	4	UA-82	40.
	◆BH-, B-, R-.....		4	RA-82	8.00		F-(Series A, B).....	4	3	FA-81	85.
	◆BR-(15 Amp. Relay).....		3	RA-83	8.00			4	2	FA-85	40.
Magnetic Relays	◆DD-02, 20, 22; DDO & DEO-20, 22.....			RA-84	9.00		F-(Series C)	4	3	FA-82	60.
/001	DD-40, 42; DDO & DEO-40, 42.....			RA-85	7.00			4	4	FA-83	80.
7008	DD-60, 80, 44, 62.....			RA-86	9.00			4	5	FA-84	100.
8501	DD-64, 82.....			RA-87	11.00		G-(Verticle Action, Series B and C)	5	2	GA-83	70.
E508	GO-20, 11, 02 (10 A., 300 V. Relay) *.....			GG-2	6.00			5	3	GA-81	105.
	GO-30, 21, 12, 03 *.....			GG-3	7.00			5	4	GA-82	140.
	GO-40, 31, 22, 13, 04 *.....			GG-4	8.00						
	GO-60, 51, 42, 33, 24, 15, 06 *.....			GG-6	11.00						
	GO-80, 71, 62, 53, 44, 35, 26, 17, 08 *.....			GG-8	13.00						
	GO-20, 11, 02 (300 Volt de Relay) *.....			GDG-2	6.50						
	GO-30, 21, 12, 03 *.....			GDG-3	7.50						
	GO-40, 31, 22, 13, 04 *.....			GDG-4	8.50						
	GO-60, 51, 42, 33, 24, 15, 06 *.....			GDG-6	11.50						
	GO-80, 71, 62, 53, 44, 35, 26, 17, 08 *.....			GDG-8	13.50						
	H-, HL.....		3	RA-3	6.00						
	H-, HL.....		4	RA-4	8.00						

◆ Each kit contains the springs for either 2 to 4 pole or 5 to 8 pole devices.

+ For 8501 DD-20, DD-22 or DEO-22, order two RA-84 kits.

* Kit for Type G, 300 volt, relays consist of 2 complete stationary contact block assembly and one complete movable contact carrier assembly.

▲ For 8702 and 8736 devices only. ★ Standard Packaging Quantity — 20.

◆ Each kit contains the springs for either 2 to 4 pole or 5 to 8 pole devices.

* For 8501 DD-22, DDO-22 or DEO-22, order two RA-84 kits.

* Kit for Type G, 300 volt, relays consist of 2 complete stationary contact block assemblies and one complete movable contact carrier assembly.

▲ For 8702 and 8736 devices only. ★ Standard Packaging Quantity — 20.

SCHEDULE DS-14 DISCOUNT

CONTACT PARTS KIT

FOR MAGNETIC STARTERS, MAGNETIC CONTACTORS, AND MAGNETIC CONTROLLERS

Equipment to be Maintained					Class 9998 Parts Kit Type No.		Price
Class	Type	No. of Poles in Kit	NEMA Size				
Magnet Controllers 1315	AD-01 through AD-04 (3-25 amperes).....	★			MA-1		\$ 10.
	AD-13 through AD-16 (26-130 amperes).....	★			MA-2		9.
High Voltage Contactors and Starters 8110 8198	DO-7 through DO-10 (Basic contactors for Class 8198 Type C & S starters).....	3	H3		LA-1		48.
Magnetic A.C. Contactors and Starters 8101 8104 8106 8108 8114 8116 8118 8120 8122 8124 8126 8128 8130 8132 8134 8136 8138 8140 8142 8144 8146 8148 8150 8152 8154 8156 8158 8160 8162 8164 8166 8168 8170 8172 8174 8176 8178 8180 8182 8184 8186 8188 8190 8192 8194 8196 8198	H (Series A).....	3	6		HA-81		130.
	J (Series A).....	3	7		JA-81		254.
	K (Series A).....	3	8		KA-81		336.

★ Each kit contains complete set of parts to change contacts on both "Lift" and "Drop" contactors.

SCHEDULE DS-15 DISCOUNT

FOR PRESSURE, FLOAT AND VACUUM SWITCHES

Equipment to Be Serviced					Class 9998 Type	Price
Class	Type					
9013	ASG, ALG, AMG, BSG, AHG, ALR, AMR, AHR, ASR, A, AH, AK, AL, AM, AR, V, VR, AK5, AK6				PC-1 Two Pole Only	\$ 3.15
9016	ASG, ASR					
9017	ASG, AHG					
9036	AG-5, BKG, A, AK				PC-2	3.00
9036	GG, GHG					
9037	GG					
9013	FSG				PC-3 **	2.75
9036	FG-1					
9037	HG-1 & 2, HSG, HFG					
9044	ESG, A					
9048	A, AR, AW					
92 3	DSG, DHG, A, AH, AH-3, G, GH, GH-3				PC-4	3.00
9017	BSG, BHG					
9237	CG, FA-3					
9016	GVG				PC-5	5.20
9013	JSG				PC-6	2.50
9013	FYG				PC-7	3.75
9013	HSG				PC-8	2.75
9013	HHG				PC-9	2.75
9013	FSG Manufactured After June 30, 1965				PC-10	2.75

◆ PC-1 Kit is only for two pole devices with date code letter H to X or with numerical date code i.e. 149 (1st Quarter, 1949).

* PC-3 is for devices manufactured prior to July 1, 1965. (Date Code 265 and prior).

SCHEDULE X DISCOUNT

ORDERING INFORMATION REQUIRED — Class and type number of kit.



PARTS KITS—EXPANDED LINE

FOR MAGNETIC STARTERS AND MAGNETIC CONTACTORS

CLASS
9998
9999

REPLACEMENT CONTACT KITS

Class	Equipment to be Maintained			Class 9998 Parts Kit Type No.	Price
	Type	No. of Poles in Kit	NEMA Size		
Magnetic D.C. Contactors and Starters 7004 7135 7136 7735 7736	H (Series A)	2	1	HC-1*	\$ 5.
	H (Series A) Silver Faced Contact Tips	2	1	HC-2*	24.
	H (Series A)	2	2	HD-1*	5.
	H (Series A) Silver Faced Contact Tips	2	2	HD-2*	24.
	H (Series A)	2	3	HE-1*	5.
	H (Series A)	2	4	HF-1*	8.
	H (Series A)	2	5	HG-1*	9.

*Each kit contains movable and stationary contact tips for two single pole or one double pole contactor. Copper contact tips are standard.

ORDERING INFORMATION REQUIRED — Class and type number of kit.

CLASS 9999 TYPE H USER MODIFICATION KITS

FOR FIELD ADDITION TO SIZE 1 THRU 5, CLASS 7004 TYPE H DC CONTACTORS

ELECTRICAL INTERLOCKS

Kit Description	Contact NEMA Size	Class 9999 Type	Price
1 N.O. contact	1, 2	HX-1	\$ 8.
1 N.C. contact	1, 2	HX-2	8.
1 N.O. and 1 N.C. contact	1, 2	HX-3	11.
1 N.O. contact	3, 4	HX-4	8.
1 N.C. contact	3, 4	HX-5	8.
1 N.O. and 1 N.C. contact	3, 4	HX-6	11.
1 N.O. contact	5	HX-7	8.
1 N.C. contact	5	HX-8	8.
1 N.O. and 1 N.C. contact	5	HX-9	11.

TIMER ATTACHMENT

Kit Description	Contact NEMA Size	Class 9999 Type	Price
Mechanically operated pneumatic timer time delay after energization (on delay) convertible to time delay after de-energization (off delay)	1 thru 5	HK-1	\$36.

MECHANICAL INTERLOCK (HORIZONTAL)

Kit Description	Contact NEMA Size	Class 9999 Type	Price
Mechanical Interlock (Including Operators)	1, 2, 3, 4 5	HM-1 HM-2	\$17. 30.

TIE BAR

Kit Description	Contact NEMA Size	Class 9999 Type	Price
Tie Bar Kit	1, 2	HT-1	\$ 4.
Tie Bar Kit	3, 4	HT-2	4.
Tie Bar Kit	5	HT-3	4.

POWER LUGS

Kit Description		Contact NEMA Size	Class 9999 Type	Price
Min. Wire Size	Max. Wire Size			
#8	#1	3	HL-3	\$ 5.
#8	#00	4	HL-4	5.
#0	300 MCM	5	HL-5	10.

CONVERSION KIT

Kit Description	Contact NEMA Size	Class 9999 Type	Price
Conversion Kit Single Pole Normally Open to Single Pole Normally Closed	1, 2	HB-1	\$42.
Conversion Kit Single Pole Normally Open to Single Pole Normally Closed	3, 4	HB-2	48.
Conversion Kit Single Pole Normally Open to Single Pole Normally Closed	5	HB-3	86.

ORDERING INFORMATION REQUIRED — Class and type number of kit and operating voltage.



SCHEDULE DS-1 DISCOUNT

TYPE S — USER MODIFICATION KITS

FOR SIZE 0-3 TYPES SB, SC, SD AND SE CONTACTORS AND STARTERS

CLASS
9999

Kit Description

NEMA
Size Type No. Price

ELECTRICAL INTERLOCKS

External Electrical Interlock with 1 N.O. contact, L.H. or R.H. mounting	0-3	SX-6	\$6.00
External Electrical Interlock with 1 N.C. contact, L.H. or R.H. mounting		SX-7	6.00
External Electrical Interlock with 1 N.O. and 1 N.C. isolated contacts, L.H. or R.H. mounting		SX-8	8.00
External Electrical Interlock with 1 N.O. overlapping contact, L.H. or R.H. mounting*	0-3	SX-9	6.00
External Electrical Interlock with 1 N.C. overlapping contact, L.H. or R.H. mounting*		SX-10	6.00
Internal Electrical Interlock with 1 N.O. contact, upper L.H. or lower R.H. mounting	0-2	SX-11	6.00
Internal Electrical Interlock with 1 N.C. contact, upper L.H. or lower R.H. mounting		SX-12	6.00

*Types SX-9 and SX-10 must be used together and are suitable for applications where it is necessary for a normally open interlock to overlap a normally closed interlock contact.

MECHANICALLY OPERATED TIMER

Mechanically operated pneumatic timer, time delay after de-energization (off delay)	0-3	SK-3	\$36.00
Mechanically operated pneumatic timer, time delay after energization (on delay)		SK-4	36.00

POWER POLE ADDER

One normally open power pole adder	0, 1 2	SB-6 SB-11†	\$11.00 20.00
One normally closed power pole adder	0, 1 2	SB-7 SB-12†	11.00 20.00
One normally open and one normally closed power pole adder	0, 1 2	SB-8 SB-13†	22.00 40.00
Two normally open power pole adder	0, 1 2	SB-9 SB-14†	22.00 40.00
Two normally closed power pole adder	0, 1 2	SB-10 SB-15†	22.00 40.00

† To add additional power poles to Size 2 contactors and starters, it is necessary to replace the coil with a coil designed to handle the additional load. Select 4 & 5 pole coil from Type S coil table on page 211

COVER MOUNTED CONTROL UNITS FOR NEMA 1 ENCLOSURE

Push Button START-STOP	0-3	SA-2	\$ 8.00
Push Button ON-OFF (2 N.O. contacts — for use on Class 8508 devices only)	1-2	SA-6	8.00
Selector Switch HAND-OFF-AUTO	0-3	SC-2	8.00
Selector Switch ON-OFF	0-3	SC-22	8.00
Closing plate for cover mounted push button and selector switch knockout (Class 8538 & Class 8539)	0-3	SG-1	1.00
Red pilot light kit for standard slip-on cover enclosure (Class 8502 or 8536), or for any voltage thru 600 volts, 50 or 60 hertz	0, 1 2	SP-2R SP-3R	15.00 15.00
Red pilot light kit for Class 8502 or 8536, or Class 8502 or 8536 Form FT for any voltage thru 600 volts, 50 or 60 hertz	3	SP-4R	15.00
Red pilot light kit for hinge cover enclosure (Class 8502 Form FT, Class 8536 Form FT, Class 8538 and Class 8539) for any voltage thru 600 volts, 50 or 60 hertz	0, 1 2	SP-12R SP-13R	15.00 15.00
Red pilot light kit for hinge cover enclosure (Class 8538 and Class 8539) for any voltage thru 600 volts, 50 or 60 hertz	3	SP-14R	15.00

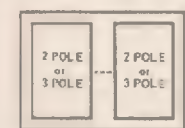
FUSE BLOCK KIT FOR COMBINATION STARTERS

Fuse block kit to convert disconnect switch in Class 8538 combination starter from non-fusible to fusible. Does not include fuse clips. (Order fuse clip kit from page 216)	0, 1 2	SF-1 SF-2	\$3.50 4.25
Two mounting brackets plus hardware for enclosing power fuse block in Class 8538 fusible combination starters	0, 1	SF-11	2.00

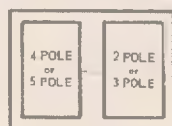
MECHANICAL INTERLOCK

The following kits consist of the mechanical interlock and base assembly for interlocking 2-5 pole contactors. Mechanical interlocks for horizontal and vertical arrangement are listed in various pole arrangements.

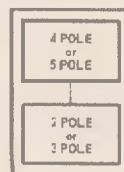
NEMA Size	Type No.	Price
0, 1	SM-1	\$ 8.00
0, 1	SM-2	8.00
0, 1	SM-3	8.00
0, 1	SM-4	8.00
0, 1	SM-5	8.00
2	SM-6	18.00
2	SM-7	18.00
2	SM-8	18.00
2	SM-9	18.00
2	SM-10	18.00
3	SM-11	18.00
3	SM-12	18.00



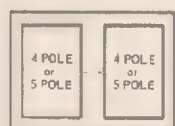
Horizontal
Type SM-1 for size 0 or 1
Type SM-6 for size 2
Type SM-12 for size 3



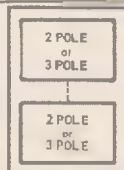
Horizontal
Type SM-2 for size 0 or 1
Type SM-7 for size 2



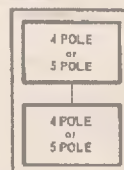
Vertical
Type SM-3 for size 0 or 1
Type SM-10 for size 2



Horizontal
Type SM-4 for size 0 or 1
Type SM-8 for size 2



Vertical
Type SM-5 for size 0 or 1
Type SM-9 for size 2
Type SM-11 for size 3



Vertical
Type SM-6 for size 0 or 1

OVERLOAD RELAY MOUNTING BRACKET

Mounting bracket for one overload relay block for use with mechanical interlock kit	0-2	SO-11	\$ 1.00
Mounting bracket for two overload relay blocks for use with mechanical interlock kit	0-2	SO-12	3.00

ORDERING INFORMATION REQUIRED — Class and type number of kit.



ELECTRICAL INTERLOCK KITS

FOR ADDITION TO AC MAGNETIC CONTACTORS,
STARTERS, AND PNEUMATIC TIMERS

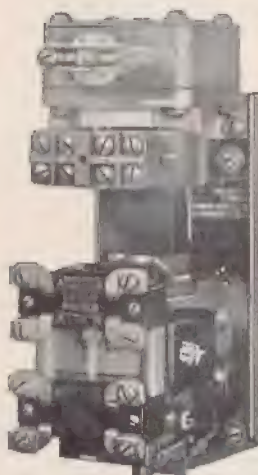
CLASS
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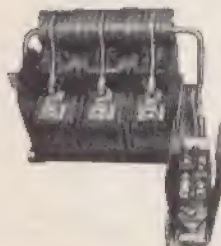
Packaging of
Electrical Interlocks



Size 0 Starter with Side
Mounted Interlocks Installed



Timer with Two Interlocks
Front Mounted



Disconnect Electrical Interlock
Installed on Disconnect Switch

ORDERING INFORMATION REQUIRED

Class and type number.

NEMA Size	Device Type No.	Type of Mounting	Contact Arrangement*	Location	Kit Type No.	Price
0	B (Series A)	Side Mounted	1—N. O.	L. H. or R. H.	BC-1★	\$ 6.00
1	C (Series A & B)		1—N. C.			
			1—N. O., 1—N. C.		BC-2★	6.00
					BC-3★	8.00
2	D	Base Mounted Long Terminal	1—N. O.	R. H.	DT-1	6.00
			1—N. C.			
		KB Unit Side Mounted ‡	1—N. C.	R. H.	DT-2	6.00
			1—N. O.			
			1—N. O., 1—N. C.	R. H. or L. H.	DT-12	8.00
			1—N. O.	R. H.	DT-5	6.00
			1—N. C.	L. H.	DT-6	
			1—N. C.	R. H.	DT-7	8.00
			1—N. C.	L. H.	DT-8	
			1—N. O., 1—N. C.	R. H.	DT-10	8.00
			1—N. O., 1—N. C.	L. H.	DT-11	
3	E	Base Mounted Long Terminal	1—N. O.	R. H.	EU-1	6.00
			1—N. C.			
		KB Unit Side Mounted ‡	1—N. O.	R. H.	EU-2	6.00
			1—N. C.			
			1—N. O., 1—N. C.	R. H. or L. H.	EU-12	8.00
			1—N. O.	R. H.	EU-5	6.00
			1—N. C.	L. H.	EU-6	
			1—N. C.	R. H.	EU-7	8.00
			1—N. C.	L. H.	EU-8	
			1—N. O., 1—N. C.	R. H.	EU-10	8.00
			1—N. O., 1—N. C.	L. H.	EU-11	
4	F (Series C)	Base Mounted	1—N. O.	R. H.	F-11	6.00
			1—N. C.			
			1—N. O.	Center	F-12	6.00
			1—N. C.			
			1—N. O.	R. H.	F-13	6.00
			1—N. C.	L. H.	F-14	
			1—N. C.	L. H.	F-15	8.00
			1—N. C.	Center	F-16	
			1—N. O., 1—N. C.	Any	F-17	12.00
			1—N. O., 1—N. C. (Overlapping †)	L. H. and Center	F-18	12.00
4	F (Series A & B)	Base Mounted	1—N. O.	R. H.	F-1	6.00
			1—N. C.			
			1—N. O.	Center	F-2	6.00
			1—N. C.			
			1—N. C.	R. H.	F-3	6.00
			1—N. C.	L. H.	F-4	
			1—N. C.	L. H.	F-5	6.00
			1—N. C.	Center	F-6	
5	G (Series B & C)		1—N. O., 1—N. C.	Any	F-7	8.00

Class 9050 Timer Types

†Parts required to add Type BO snap switch interlock to Type B, ac timer.
†Parts required to add Type BO snap switch interlock to Type C, dc timer.
Parts required to change Type C, dc timer from time delay after de-energization to time delay after energization.
Parts required to change Type C, dc timer from time delay after energization to time delay after de-energization.

Type of Mounting	Contact Arrangement	Type	Price
Front	1—N. O., 1—N. C.	R-4	\$ 5.00
Front	1—N. O., 1—N. C.	R-5	5.00
		K-5	1.50
		K-6	1.00

•Double circuit interlocks (1-N.O., 1-N.C.) must be used on same polarity.

†A total of 2-double circuit interlocks may be mounted on a Class 9050 Type B or C timer. For each double circuit interlock required, order either an R-4 or R-5 parts kit.

‡For 2 pole or 3 pole starters only. Consult factory for 4 pole starters.

•Type F-18 interlock kit contains two separate interlock blocks, one normally open and one normally closed, which when used together have overlapping contacts. The normally open block occupies the right-hand base position and the normally closed block occupies the center position directly to the left.

★Standard packaging quantity — 20.

To convert one N. O. pole to N. C. on Size 1, Type C, Series A or B, Use Type K-1 Series A Kit \$ 2.75

To convert one N. O. pole to N. C. on Size 0, Type B, Series A, Use Type K-7 Kit 2.75

DISCONNECT SWITCH and CIRCUIT BREAKER INTERLOCK KITS

The interlock kits listed below are available for field installation on Class 8538 and 8539 combination starters (including the type S) that use the flange mounted operating handle mechanism.

Class	Type	Single Pole Interlock		Double Pole Interlock	
		Type	Price	Type	Price
8538	SB, SC, SD, B, C, D	R-6	\$7.50	R-7	\$14.50
9422	RC, RD				
8538	SE, E, F	R-8	8.50	R-9	16.00
9422	RE, RF				
8539	SB, SC, SD, SE	R-26	2.50	R-27	16.00
9422	RN, RP, RR, RT				
8539	B, C, D E▲	R-14	7.50	R-15	14.50
8539	E*, F	R-16	8.50	R-17	16.00

▲Size 3 with ML-1 breaker

*Size 3 with ML-3 breaker.



USER MODIFICATION KITS & FUSE CLIP KITS

PUSH BUTTON, SELECTOR SWITCH AND PILOT LIGHT KITS

Class 9999 push button, selector switch, and pilot light kits are available for quick and easy addition to NEMA 1 enclosed magnetic starters and contactors which are in current production or for older devices which have knockouts provided in the cover for such accessories. Pilot light Kits are also available for NEMA 1 enclosed manual starters and switches.

**CLASS
9999**

PILOT LIGHT KITS

25-60 HERTZ

Class	NEMA Size	Device Type No.	Volts	Kit Type No.	Price
8502 8536 8538 8539	00	A (Series B & C)	110/120	PL-1	\$15.
			208/240	PL-2	15.
			440/600	PL-3	15.
			110/120	PL-4	15.
			208/240	PL-5	15.
2510▲	0, 1, 2, 3, 4, 5	B, C, D, E, F, G*	440/600	PL-6	15.
			110/120	PL-7	5.
			208/240	PL-8	5.
			440/600	PL-9	5.
			110/120	PL-10	3.
	M-0 M-1	BG-1, BG-2, CG-1 or CG-3 Only	440/600	PL-11	5.
			208/240	PL-12	5.
			110/120	PL-13	5.
			440/600		
		FF or FG	110/120		
			208/240		
			440/600		

*Size 5 combination starters utilize the oil-tight 9001 Type K pilot light units.

▲Kits are also available for Class 2511 and 2512 devices. Consult Square D field office for details.



Size 00 Starter with Pilot Light and Push Button Kits Installed

PUSH BUTTON AND SELECTOR SWITCH KITS

Class	NEMA Size	Device Type No.	Description	Kit Type No.	Price
8502	00	A (Series B & C)	"Start-Stop" momentary contact push button.	A	\$ 8.
8536			"Hand-Off-Auto" selector switch.	SC-1	8.
8502	0 or 1	B or C	"Start-Stop" momentary contact push button.	A-1★	8.
8536			"Hand-Off-Auto" selector switch.	C-1★	8.
8538	2 or 3	D or E	"Start-Stop" momentary contact push button.	A-2	8.
8539			"Hand-Off-Auto" selector switch.	C-2	8.
8547	4	F	"Start-Stop" momentary contact push button.	A-4	8.
8506			"Hand-Off-Auto" selector switch.	C-4	8.
8530	5	G	"Start-Stop" momentary contact push button.		
8540			"Hand-Off-Auto" selector switch.		
8580			Use Class 9001 Type T oil-tight units.		

★Standard packaging quantity — 20.

Class 9999 Type PL Pilot Light Kit for Size 00 Starter



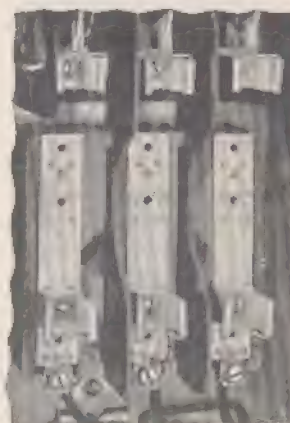
FUSE CLIP KITS

Disconnect switches for fusible Class 8538 and Class 8738 combination starters with flange mounted operating mechanisms have interchangeable fuse clips in NEMA 1, 4 & 12 enclosures, Sizes 0-4. The spacing of the fuse clips can be changed from 250 volt fuse spacing to 600 volt fuse spacing or vice versa and the size of the fuse clips can be changed by the use of a kit. The kit contains six fuse clip assemblies and necessary hardware required for conversion. The fusible horsepower rating can thus be changed easily, affording greater flexibility with minimum stock of parts.

**CLASS
9999**

CLASS 9999 FUSE CLIP KITS

NEMA Starter Size	Dis-connect Ampere Rating	NEMA Class H Fuses				NEMA Class J Fuses			
		Fuse Clip Ratings— Amps.		Type	Price	Fuse Clip Rating Amps. 600 V. Max.	Type	Price	
		250 V. Max.	600 V. Max.						
0 & 1	30	0-30		S1	\$ 0.80				
0	30		0-30	S2	1.50	0-30	SJ-2	\$6.25	
1	30	31-60	0-30	S2	1.50	0-30	SJ-2	6.25	
1	30		31-60	S3	2.75	31-60	SJ-3	7.50	
2	60	31-60	0-30	S2	1.50	0-30	SJ-2	6.25	
2	60		31-60	S3	2.75	31-60	SJ-3	7.50	
2	60	61-100	61-100	S4	10.20	61-100	SJ-4	12.25	
3	100		31-60	S3	2.75	31-60	SJ-3	7.50	
3	100	61-100	61-100	S4	10.20	61-100	SJ-4	12.25	
3	100	101-200	101-200	S5	18.90	101-200	SJ-5	18.90	
4	200	101-200	101-200	S5	18.90	101-200	SJ-5	18.50	
4	200	201-400	201-400	S6	46.00				



Interchangeable Fuse Clips

ORDERING INFORMATION REQUIRED: Class and type number.



INSTRUCTIONS FOR USE OF TABLES

To select thermal units for most applications:

1. Determine rated full load current from the motor nameplate or from the motor manufacturer.
2. Locate the proper selection table based on the Class, Type and Size of equipment involved.
3. The proper thermal unit number will be found adjacent to the range of full load currents in which the rated motor current falls.

Note: When motor full load current is not known, see pages 226-228.

Standard tables apply for continuous duty, open type motors, and others having a service factor of 1.15 or higher, and for the usual

installation in which the motor and the controller operate in the same ambient temperature. Standard selections will trip at 125% of motor full load current, or less, under sustained operation in an ambient (room) temperature of 40° C (104° F).

For other motors such as totally enclosed fan cooled, explosion-proof, etc., which have a service factor of 1.0, or for installations in which the motor operates in an ambient temperature different from that of the controller, refer to Table A below. Multiply the motor full load current by the factor that applies from Table A. Use this computed value for selecting the proper thermal unit from the standard tables. For intermittent duty motors, consult Square D Field Office.

TABLE A — SELECTION OF THERMAL UNITS FOR SPECIAL APPLICATIONS

Motor Service Factor	Type of Motor	FULL LOAD CURRENT MULTIPLIERS		
		If Ambient Temperature of Motor is Same as Controller (Normal Condition)	If Ambient Temperature of Motor is a Constant 10° C (18° F) Higher Than Controller	If Ambient Temperature of Motor is a Constant 10° C (18° F) Lower Than Controller
1.15 or Higher	Continuous duty, open type (drip-proof, etc.), with rated temperature rise of 40° or 60° C *	1.0	.9	1.05
1.0	Continuous duty, totally enclosed (TENV, TEFC, etc.), with rated temperature rise of 50°, 55°, 70°, or 75° C *	.9	.8	.95

* Motors built after 1964 may not show a temperature rise rating on nameplate — use service factor as basis for thermal unit selection.

MELTING ALLOY THERMAL UNITS

FOR USE WITH 1.15 SERVICE FACTOR MOTORS OPERATING UNDER NORMAL CONDITIONS

TABLE 1 — MANUAL STARTERS

STANDARD TRIP UNITS

For Use With			Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number
Class	Type	Size										
2510 2512	F Series A	Fractional Hp	0.41 - 0.44	A .49	0.97 - 1.04	A 1.16	.96 - 2.15	A 2.31	4.33 - 4.90	A 6.20	9.68 - 9.95	A 14.1
			0.45 - 0.49	A .54	1.05 - 1.16	A 1.25	2.16 - 2.38	A 2.57	4.91 - 5.35	A 6.99	9.96 - 10.8	A 14.8
			0.50 - 0.53	A .59	1.17 - 1.29	A 1.39	2.39 - 2.75	A 2.81	5.36 - 5.85	A 7.65	10.9 - 12.1	A 16.2
			0.54 - 0.58	A .65	1.30 - 1.37	A 1.54	2.76 - 2.84	A 3.61	5.86 - 6.41	A 8.38	12.2 - 13.1	A 17.9
			0.59 - 0.65	A .71	1.38 - 1.47	A 1.63	2.85 - 3.06	A 3.95	6.42 - 6.79	A 9.25	13.2 - 13.9	A 19.8
			0.66 - 0.71	A .78	1.48 - 1.56	A 1.75	3.07 - 3.45	A 4.32	6.80 - 7.57	A 9.85	14.0 - 15.0	A 21.3
			0.72 - 0.78	A .86	1.57 - 1.65	A 1.86	3.46 - 3.70	A 4.79	7.58 - 8.15	A 11.0	15.1 - 16.0	A 25.2
			0.79 - 0.85	A .95	1.66 - 1.79	A 1.99	3.71 - 4.07	A 5.30	8.16 - 8.98	A 11.9		
			0.86 - 0.96	A 1.02	1.80 - 1.95	A 2.15	4.08 - 4.32	A 5.78	8.99 - 9.67	A 13.2		
2510	M, T Series A	Single Phase M-0 M-1 M-1P	0.33 - 0.36	B 0.44	1.15 - 1.29	B 1.67	4.25 - 4.54	B 6.25	12.9 - 13.9	B 19.5	Size M-1 — 27 Amp. Max. Full Load Cur.	
			0.37 - 0.40	B 0.51	1.30 - 1.42	B 1.88	4.55 - 5.29	B 6.90	14.0 - 16.1	B 22.0	Size M-0 — 18 Amp. Max. Full Load Cur.	
			0.41 - 0.45	B 0.57	1.43 - 1.64	B 2.10	5.30 - 5.73	B 7.70	16.2 - 17.6	B 25.0	Size M-1P — 36 Amp. Max. Full Load Cur.	
			0.46 - 0.52	B 0.63	1.65 - 1.80	B 2.40	5.74 - 6.35	B 8.20	17.7 - 20.6	B 28.0	Size M-0 — 18 Amp. Max. Full Load Cur.	
			0.53 - 0.59	B 0.71	1.81 - 2.10	B 2.65	6.36 - 7.08	B 9.10			Size M-1P — 36 Amp. Max. Full Load Cur.	
			0.60 - 0.66	B 0.81	2.11 - 2.30	B 3.00	7.09 - 7.83	B 10.2			Size M-0 — 18 Amp. Max. Full Load Cur.	
			0.67 - 0.73	B 0.92	2.31 - 2.61	B 3.30	7.84 - 8.47	B 11.5			Size M-1P — 36 Amp. Max. Full Load Cur.	
			0.74 - 0.81	B 1.03	2.62 - 2.99	B 3.70	8.48 - 9.83	B 12.8			Size M-0 — 18 Amp. Max. Full Load Cur.	
			0.82 - 0.91	B 1.16	3.00 - 3.37	B 4.15	9.84 - 10.5	B 14.0			Size M-1P — 36 Amp. Max. Full Load Cur.	
			0.92 - 1.02	B 1.30	3.38 - 3.94	B 4.85	10.6 - 11.4	B 15.5			Size M-0 — 18 Amp. Max. Full Load Cur.	
			1.03 - 1.14	B 1.45	3.95 - 4.24	B 5.50	11.5 - 12.8	B 17.5			Size M-1P — 36 Amp. Max. Full Load Cur.	
2510 2512	M, T Series A	Poly-Phase M-0 M-1	0.32 - 0.34	B 0.44	0.87 - 0.98	B 1.30	2.52 - 2.87	B 3.70	6.81 - 7.51	B 10.2	16.7 - 19.4	B 28.0
			0.35 - 0.38	B 0.51	0.99 - 1.09	B 1.45	2.88 - 3.24	B 4.15	7.52 - 7.99	B 11.5	19.5 - 21.1	B 32.0
			0.39 - 0.43	B 0.57	1.10 - 1.24	B 1.67	3.25 - 3.78	B 4.85	8.00 - 9.23	B 12.8	21.2 - 24.4	B 36.0
			0.44 - 0.50	B 0.63	1.25 - 1.36	B 1.88	3.79 - 4.06	B 5.50	9.24 - 9.97	B 14.0	24.5 - 27.0	B 40.0
			0.51 - 0.56	B 0.71	1.37 - 1.57	B 2.10	4.07 - 4.36	B 6.25	9.98 - 10.7	B 15.5		
			0.57 - 0.63	B 0.81	1.58 - 1.73	B 2.40	4.37 - 5.02	B 6.90	10.8 - 12.1	B 17.5		
			0.64 - 0.71	B 0.92	1.74 - 2.02	B 2.65	5.03 - 5.50	B 7.70	12.2 - 13.1	B 19.5		
			0.71 - 0.78	B 1.03	2.03 - 2.21	B 3.00	5.51 - 6.10	B 8.20	13.2 - 15.2	B 22.0		
			0.79 - 0.86	B 1.16	2.22 - 2.51	B 3.30	6.11 - 6.80	B 9.10	15.3 - 16.6	B 25.0		
			0.33 - 0.35	B 0.44	1.05 - 1.14	B 1.45	3.38 - 3.91	B 4.85	9.62 - 10.3	B 14.0	30.0 - 32.1	B 32.0
			0.36 - 0.40	B 0.50	1.15 - 1.31	B 1.67	3.92 - 4.21	B 5.50	10.4 - 11.2	B 15.5	32.2 - 35.8	B 36.0
			0.41 - 0.45	B 0.57	1.32 - 1.41	B 1.88	4.22 - 4.53	B 6.25	11.3 - 12.7	B 17.5	35.9 - 37.0	B 40.0
			0.46 - 0.52	B 0.63	1.42 - 1.63	B 2.10	4.54 - 5.24	B 6.90	12.8 - 13.6	B 19.5		
			0.53 - 0.58	B 0.71	1.64 - 1.79	B 2.40	4.25 - 5.77	B 7.70	13.7 - 15.8	B 22.0		
			0.59 - 0.66	B 0.81	1.80 - 2.03	B 2.65	5.78 - 6.35	B 8.20	15.9 - 17.4	B 25.0		
			0.67 - 0.73	B 0.92	2.10 - 2.23	B 3.00	6.36 - 7.12	B 9.10	17.5 - 20.1	B 28.0		
			0.74 - 0.81	B 1.03	2.30 - 2.61	B 3.30	7.13 - 7.85	B 10.2				
			0.82 - 0.91	B 1.16	2.62 - 2.98	B 3.70	7.86 - 8.42	B 11.5				
			0.92 - 1.04	B 1.30	2.99 - 3.37	B 4.15	8.43 - 9.61	B 12.8				

THERMAL UNIT PRICES

Price of thermal units is normally included in the price of the controller. However, when thermal units are purchased separately, the prices at right apply.

All standard trip units (except Types D & W), each
Type D standard trip units, each
Type W standard trip units, each
Type FB quick trip units, each
Type JB slow trip units, each

\$1.50
4.00
1.00
1.50
4.00



OVERLOAD RELAY THERMAL UNITS SELECTION TABLES

MELTING ALLOY THERMAL UNITS

FOR USE WITH 1.15 SERVICE FACTOR MOTORS OPERATING UNDER NORMAL CONDITIONS

TABLE 1 (Continued) — MANUAL STARTERS

STANDARD TRIP UNITS

For Use With			Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number
Class	Type	Size												
2510 2511 2512	B, C Series A or B	M-0 M-1 ± M-1P ±	0.32 - 0.36	B 0.44	1.04 - 1.17	B 1.45	3.49 - 4.00	B 4.85	9.68 - 10.7	B 14.	22.5 - 24.9	B 32.		
			0.37 - 0.41	B 0.51	1.19 - 1.31	B 1.67	4.01 - 4.51	B 5.50	10.8 - 12.1	B 15.5	25.0 - 28.1	B 36.		
			0.42 - 0.46	B 0.57	1.32 - 1.46	B 1.88	4.52 - 4.96	B 6.25	12.2 - 13.6	B 17.5				
			0.47 - 0.52	B 0.63	1.47 - 1.65	B 2.10	4.97 - 5.52	B 6.90	13.7 - 15.3	B 19.5	Size M-1 — 27 Amp. Max. Full Load Cur.			
			0.53 - 0.59	B 0.71	1.65 - 1.85	B 2.40	5.53 - 6.87	B 7.70	15.4 - 17.3	B 22.	28.2 - 31.3	B 40.		
			0.60 - 0.67	B 0.81	1.85 - 2.12	B 2.65	5.88 - 6.47	B 8.20	17.4 - 9.4	B 25.				
			0.68 - 0.77	B 0.92	2.13 - 2.36	B 3.00	6.48 - 7.23	B 9.10			Size M-0 — 18 Amp. Max. Full Load Cur.			
			0.78 - 0.85	B 1.03	2.37 - 2.65	B 3.30	7.24 - 8.07	B 10.2			31.4 - 36.0	B 45.		
			0.86 - 0.93	B 1.16	2.65 - 3.03	B 3.70	8.08 - 8.95	B 11.5			Size M-1P — 36 Amp. Max. Full Load Cur.			
			0.94 - 1.03	B 1.30	3.04 - 3.48	B 4.15	8.96 - 9.67	B 12.8	19.5 - 22.4	B 28.0	20.0 - 22.3	GF 25.0		
2510	R, S ± (All)	M-0 M-1 M-1P	0.36 - 0.39	GF 0.44	1.01 - 1.10	GF 1.26	2.64 - 2.74	GF 3.30	8.24 - 9.19	GF 10.3	22.4 - 24.7	GF 28.0		
			0.40 - 0.42	GF 0.49	1.11 - 1.21	GF 1.38	2.75 - 2.98	GF 3.44	9.20 - 9.84	GF 11.5	24.8 - 27.9	GF 31.0		
			0.43 - 0.47	GF 0.53	1.22 - 1.33	GF 1.52	2.99 - 3.34	GF 3.74	9.85 - 10.3	GF 12.3				
			0.48 - 0.51	GF 0.59	1.34 - 1.46	GF 1.67	3.35 - 3.71	GF 4.19	10.4 - 11.5	GF 13.0	Size M-1 — 27 Amp. Max. Full Load Cur.			
			0.52 - 0.56	GF 0.65	1.47 - 1.61	GF 1.84	3.72 - 4.24	GF 4.65	11.6 - 12.7	GF 14.4	28.0 - 30.3	GF 35.0		
			0.57 - 0.62	GF 0.71	1.62 - 1.77	GF 2.02	4.25 - 4.71	GF 5.30	12.8 - 14.3	GF 15.9	30.4 - 32.7	GF 38.0		
			0.63 - 0.68	GF 0.78	1.78 - 1.98	GF 2.22	4.72 - 5.35	GF 5.90	14.4 - 15.9	GF 18.0	32.8 - 36.0	GF 41.0		
			0.69 - 0.75	GF 0.86	1.99 - 2.13	GF 2.48	5.36 - 5.75	GF 6.70	16.0 - 17.9	GF 20.0				
			0.76 - 0.82	GF 0.94	2.14 - 2.23	GF 2.67	5.76 - 6.55	GF 7.20	18.0 - 19.9	GF 22.5				
			0.83 - 0.91	GF 1.03	2.24 - 2.41	GF 2.80	6.56 - 7.43	GF 8.20			Size M-0 — 18 Amp. Max. Full Load Cur.			
			0.92 - 1.00	GF 1.14	2.42 - 2.63	GF 3.02	7.44 - 8.23	GF 9.30			Size N-1P — 36 Amp. Max. Full Load Cur.			

±For group fusing applications refer to page 228.

TABLE 2 — AC MAGNETIC STARTERS (SMALL ENCLOSURE)

STANDARD TRIP UNITS

For Use With			Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number	
Class	Type	Size											
8536 (Starter In Own Enclosure)	A Series B (Class 8536 Only)	00	0.42 - 0.46	A .49	0.82 - 0.89	A .95	1.52 - 1.62	A 1.75	2.78 - 2.99	A 3.61	5.24 - 5.39	A 6.99	
			0.47 - 0.50	A .54	0.90 - 0.98	A 1.02	1.63 - 1.73	A 1.86	3.00 - 3.26	A 3.95	5.40 - 5.88	A 7.65	
			0.51 - 0.55	A .59	0.99 - 1.12	A 1.16	1.74 - 1.86	A 1.99	3.27 - 3.59	A 4.32	5.89 - 6.56	A 8.38	
			0.56 - 0.62	A .65	1.13 - 1.20	A 1.25	1.87 - 2.02	A 2.15	3.60 - 3.99	A 4.79	6.57 - 7.18	A 9.25	
			0.63 - 0.67	A .71	1.21 - 1.34	A 1.39	2.03 - 2.25	A 2.31	4.00 - 4.42	A 5.30	7.19 - 7.80	A 9.85	
			0.68 - 0.73	A .78	1.35 - 1.41	A 1.54	2.26 - 2.46	A 2.57	4.43 - 4.61	A 5.78	7.81 - 9.00	A 11.0	
				0.74 - 0.81	A .86	1.42 - 1.51	A 1.63	2.47 - 2.77	A 2.81	4.62 - 5.23	A 6.20		
	B Series A	0	0.29 - 0.31	B 0.44	1.10 - 1.23	B 1.67	4.06 - 4.40	B 6.25	11.4 - 12.5	B 19.5	24.8 - 27.2	B 50.	
			0.32 - 0.35	B 0.51	1.24 - 1.42	B 1.88	4.41 - 5.00	B 6.90	12.6 - 13.4	B 22.	Size 1 — 27 Amp. Max. Full Load Cur.		
			0.36 - 0.40	B 0.57	1.43 - 1.64	B 2.10	5.01 - 5.67	B 7.70	13.5 - 15.4	B 25.	27.3 - 29.9	B 56.	
		1	0.41 - 0.49	B 0.63	1.65 - 1.80	B 2.40	5.68 - 6.31	B 8.20	15.5 - 17.1	B 28.0	30.0 - 32.1	B 62.	
			0.50 - 0.53	B 0.71	1.81 - 2.05	B 2.65	6.32 - 7.03	B 9.10	17.2 - 18.6	B 32.	33.0 - 36.0	B 66.	
			0.54 - 0.61	B 0.81	2.06 - 2.30	B 3.00	7.04 - 7.74	B 10.2	Size 0 — 18 Amp. Max. Full Load Cur.				
	C Series B	1P	0.62 - 0.68	B 0.92	2.31 - 2.58	B 3.30	7.75 - 6.07	B 11.5	18.7 - 21.0	B 36.	Size 1P — 36 Amp. Max. Full Load Cur.		
			0.69 - 0.77	B 1.03	2.59 - 2.93	B 3.70	8.08 - 9.19	B 12.8	21.1 - 22.7	B 40.			
			0.78 - 0.89	B 1.16	2.94 - 3.32	B 4.15	9.20 - 9.83	B 14.	22.8 - 24.7	B 45.			
			0.90 - 1.03	B 1.30	3.33 - 3.81	B 4.85	9.84 - 10.5	B 15.5					
				1.04 - 1.09	B 1.45	3.82 - 4.05	B 5.50	10.6 - 11.3	B 17.5				
	8536 (Model 3 Control Center) ±	SB, SC Series A	0, 1 Type S	0.29 - 0.31	B 0.44	0.95 - 1.05	B 1.45	3.16 - 3.55	B 4.85	8.56 - 9.53	B 14.	19.0 - 21.2	B 32.
				0.32 - 0.34	B 0.51	1.06 - 1.22	B 1.67	3.56 - 4.00	B 5.50	9.54 - 10.6	B 15.5	21.3 - 23.0	B 36.
0.35 - 0.38				B 0.57	1.23 - 1.34	B 1.88	4.01 - 4.40	B 6.25	10.7 - 11.8	B 17.5	23.1 - 25.5	B 40.	
0.39 - 0.45				B 0.63	1.35 - 1.51	B 2.10	4.41 - 4.88	B 6.90	11.9 - 13.2	B 19.5	25.6 - 27.0	B 45.	
0.46 - 0.54				B 0.71	1.52 - 1.71	B 2.40	4.89 - 5.19	B 7.70	13.3 - 14.9	B 22.	Size 1 — 27 Amp. Max. Full Load Cur.		
0.55 - 0.61				B 0.81	1.72 - 1.93	B 2.65	5.20 - 5.73	B 8.20	15.0 - 16.6	B 25.			
0.62 - 0.66				B 0.92	1.94 - 2.14	B 3.00	5.74 - 6.39	B 9.10	16.7 - 18.9	B 28.0			
0.67 - 0.73				B 1.03	2.15 - 2.40	B 3.30	6.40 - 7.13	B 10.2	Size 0 — 18 Amp. Max. Full Load Cur.				
0.74 - 0.81				B 1.16	2.41 - 2.72	B 3.70	7.14 - 7.90	B 11.5					
						0.82 - 0.94	B 1.30	2.73 - 3.15	B 4.15	7.91 - 8.55	B 12.8		
QMB Panel	D Series A	1P Type S	0.81 - 0.92	B 1.16	1.90 - 2.16	B 2.65	4.16 - 4.49	B 6.25	8.16 - 9.32	B 12.8	18.5 - 21.6	B 28.0	
			0.93 - 1.07	B 1.30	2.17 - 2.37	B 3.00	4.50 - 5.15	B 6.90	9.33 - 9.97	B 14.	21.7 - 24.0	B 32.	
			1.08 - 1.14	B 1.45	2.38 - 2.66	B 3.30	5.16 - 5.77	B 7.70	9.98 - 10.7	B 15.5	24.1 - 28.6	B 36.	
			1.15 - 1.26	B 1.67	2.67 - 2.99	B 3.70	5.78 - 6.61	B 8.20	10.8 - 12.0	B 17.5	28.7 - 30.7	B 40.	
			1.27 - 1.49	B 1.88	3.00 - 3.40	B 4.15	6.62 - 7.14	B 9.10	12.1 - 13.9	B 19.5	30.8 - 33.5	B 45.	
			1.50 - 1.73	B 2.10	3.41 - 3.94	B 4.85	7.15 - 7.97	B 10.2	14.0 - 15.7	B 22.	33.6 - 36.0	B 56.	
			1.74 - 1.89	B 2.40	3.95 - 4.15	B 5.50	7.98 - 8.15	B 11.5	15.8 - 18.4	B 25.			
			0.31 - 0.35	B 0.44	0.93 - 1.03	B 1.30	2.66 - 2.97	B 3.70	7.32 - 8.21	B 10.2	20.1 - 22.9	B 28.0	
			0.36 - 0.39	B 0.51	1.04 - 1.19	B 1.45	2.98 - 3.47	B 4.15	8.22 - 9.18	B 11.5	23.0 - 25.8	B 32.	
			0.40 - 0.44	B 0.57	1.20 - 1.34	B 1.67	3.48 - 3.94	B 4.85	9.19 - 9.99	B 12.8	25.9 - 28.6	B 36.	
SD Series A	2 Type S	0.45 - 0.50	B 0.63	1.35 - 1.50	B 1.88	3.95 - 4.44	B 5.50	10.0 - 11.0	B 14.	28.7 - 32.2	B 40.		
		0.51 - 0.58	B 0.71	1.51 - 1.72	B 2.10	4.45 - 4.94	B 6.25	11.1 - 12.4	B 15.5	32.3 - 35.8	B 45.		
		0.59 - 0.65	B 0.81	1.73 - 1.89	B 2.40	4.95 - 5.52	B 6.90	12.5 - 13.9	B 17.5	35.9 - 40.1	B 50.		
		0.66 - 0.73	B 0.92	1.90 - 2.14	B 2.65	5.53 - 5.88	B 7.70	14.0 - 15.7	B 19.5	40.2 - 45.0	B 56.		
		0.74 - 0.82	B 1.03	2.15 - 2.36	B 3.00	5.89 - 6.52	B 8.20	15.8 - 17.8	B 22.				
		0.83 - 0.92	B 1.16	2.37 - 2.65	B 3.30	6.53 - 7.31	B 9.10	17.9 - 20.0	B 25.				
		3.29 - 3.74	B 4.85	6.14 - 6.91	B 9.10	11.7 - 12.9	B 17.5	23.7 - 26.3	B 36.	40.8 - 41.9	B 66.		
		3.75 - 4.23	B 5.50	6.92 - 7.70	B 10.2	13.0 - 14.6	B 19.5	26.4 - 29.3	B 40.	42.0 - 45.0	B 70.		
			4.24 - 4.68	B 6.25	7.71 - 8.56	B 11.5	14.7 - 16.5	B 22.	29.4 - 35.1	B 45.			
			4.69 - 5.22	B 6.90	8.57 - 9.39	B 12.8	16.6 - 18.5	B 25.	35.2 - 36.1	B 50.			
			5.23 - 5.67	B 7.70	9.40 - 10.4	B 14.	18.6 - 21.0	B 28.0	36.2 - 39.1	B 56.			
			5.68 - 6.13	B 8.20	10.5 - 11.6	B 15.5	21.1 - 23.6	B 32.	39.2 - 40.7	B 62.			

OVERLOAD RELAY THERMAL UNITS

MELTING ALLOY THERMAL UNITS

FOR USE WITH 1.15 SERVICE FACTOR MOTORS OPERATING UNDER NORMAL CONDITIONS



TABLE 2 (Continued) — AC MAGNETIC STARTERS (SMALL ENCLOSURE)

STANDARD TRIP UNITS

For Use With			Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number
Class	Type	Size										
8536 (Starter In own Enclosure - SE) 8998 8999 (Model 3 Control Center)*	E Series A	3	14.4 - 15.7	C 20	24.4 - 28.6	C 34	36.6 - 41.5	C 51	59.5 - 64.3	C 83		
			15.8 - 18.6	C 22	28.7 - 30.1	C 40	41.6 - 47.3	C 58	64.4 - 73.5	C 90		
			18.7 - 21.4	C 26	30.2 - 32.2	C 42	47.4 - 53.7	C 65	73.6 - 81.3	C 103		
			21.5 - 24.3	C 30	32.3 - 36.5	C 45	53.8 - 59.4	C 75	81.4 - 90.0	C 114		
	SE Series A	3 Single Phase Type S	15.5 - 16.4	CC 20.9	23.5 - 25.6	CC 33.3	36.6 - 39.1	CC 54.5	55.0 - 58.9	CC 87.7	77.5 - 80.7	CC 143
			16.5 - 17.6	CC 22.8	25.7 - 27.3	CC 36.4	39.2 - 41.7	CC 59.4	60.0 - 63.3	CC 94.0	80.8 - 83.1	CC 156
			17.7 - 19.1	CC 24.6	27.4 - 29.4	CC 39.6	41.8 - 44.8	CC 64.3	63.4 - 67.2	CC 103.	83.2 - 87.3	CC 167
			19.2 - 20.4	CC 26.3	29.5 - 31.5	CC 42.7	44.9 - 48.0	CC 68.5	67.3 - 72.4	CC 112	87.4 - 90.0	CC 180
			20.5 - 22.1	CC 28.8	31.6 - 33.7	CC 46.6	48.1 - 50.7	CC 74.6	72.5 - 74.9	CC 121		
			22.2 - 23.4	CC 31.0	33.8 - 36.5	CC 50.1	50.8 - 54.9	CC 81.5	75.0 - 77.4	CC 132		
	QMB Panel	3 Poly-Phase Type S	14.4 - 15.3	CC 20.9	22.8 - 24.2	CC 33.3	34.3 - 36.9	CC 54.5	52.0 - 56.5	CC 87.7	73.0 - 74.9	CC 143
			15.4 - 16.4	CC 22.8	24.3 - 25.9	CC 36.4	37.0 - 39.8	CC 59.4	60.3 - 64.7	CC 94.0	75.0 - 77.9	CC 156
16.5 - 18.4			CC 24.6	26.0 - 27.8	CC 39.6	39.9 - 42.3	CC 64.3	60.8 - 64.8	CC 103	78.0 - 80.9	CC 167	
18.5 - 19.6			CC 26.3	27.9 - 29.8	CC 42.7	42.4 - 45.3	CC 68.5	64.9 - 67.1	CC 112	81.0 - 82.9	CC 180	
19.7 - 21.0			CC 28.8	29.9 - 31.7	CC 46.6	45.4 - 47.9	CC 74.6	67.2 - 70.1	CC 121	83.0 - 90.0	CC 196	
21.1 - 22.7			CC 31.0	31.8 - 34.2	CC 50.1	48.0 - 51.9	CC 81.5	70.2 - 72.9	CC 132			
F Series C	4	43.8 - 46.3	CC 64.3	54.7 - 58.4	CC 81.5	68.5 - 73.3	CC 103	84.3 - 91.9	CC 132	108. - 115.	CC 167	
		46.4 - 50.0	CC 68.5	58.5 - 62.6	CC 87.7	73.4 - 78.9	CC 112	92.0 - 99.3	CC 143	116. - 135.	CC 180	
		50.1 - 54.6	CC 74.6	62.7 - 68.4	CC 94.0	79.0 - 84.2	CC 121	99.4 - 107	CC 156			
G Series D	5	84.0 - 91.4	DD 112	107. - 114.	DD 140	138. - 155	DD 185	190. - 214.	DD 265			
		91.5 - 99.4	DD 121	115. - 123.	DD 150.	158. - 176.	DD 220	215. - 229.	DD 300			
		99.5 - 106.	DD 128	124 - 137	DD 160	177. - 189.	DD 250	230. - 270.	DD 320			
H, J, K Series A	6, 7, 8											

Same as shown in Table 3 for Sizes 6, 7 and 8

*For Model 4 control centers, refer to page 229.

TABLE 3—AC MAGNETIC STARTERS (LARGE ENCLOSURE)

STANDARD TRIP UNITS

For Use With			Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number
Glass	Type	Size												
8536 Starter Used in Multi-Motor Panels)	A Series B (Class 8536 Only)	00 Non-Rev.	0.43 - 0.47	A .49	0.85 - 0.91	A .95	1.57 - 1.67	A 1.75	2.93 - 3.16	A 3.61	5.62 - 5.85	A 6.99		
			0.48 - 0.51	A .54	0.92 - 1.01	A 1.02	1.68 - 1.77	A 1.86	3.17 - 3.48	A 3.95	5.86 - 6.36	A 7.65		
			0.52 - 0.56	A .59	1.02 - 1.15	A 1.16	1.78 - 1.92	A 1.99	3.49 - 3.83	A 4.32	6.07 - 6.99	A 8.38		
			0.57 - 0.64	A .55	1.16 - 1.23	A 1.25	1.93 - 2.09	A 2.15	3.84 - 4.24	A 4.79	7.00 - 7.6	A 9.25		
			0.65 - 0.69	A .71	1.24 - 1.37	A 1.39	2.10 - 2.31	A 2.31	4.25 - 4.62	A 5.30	7.68 - 8.15	A 9.8		
			0.70 - 0.76	A .78	1.38 - 1.45	A 1.54	2.32 - 2.56	A 2.57	4.63 - 4.92	A 5.78	8.16 - 9.00	A 11.0		
				0.77 - 0.84	A .86	1.46 - 1.56	A 1.63	2.57 - 2.92	A 2.81	4.93 - 5.61	A 6.20			
	A Series C (Class 8736 Only)	00 Reversing	0.34 - 0.39	B .44	0.70 - 0.78	B .92	1.44 - 1.59	B 1.66	2.80 - 3.15	B 3.70	5.76 - 6.06	B 7.73		
			0.39 - 0.43	B .51	0.79 - 0.88	B 1.03	1.56 - 1.81	B 2.10	3.16 - 3.59	B 4.15	6.07 - 6.66	B 8.29		
			0.44 - 0.47	B .57	0.89 - 0.99	B 1.15	1.82 - 2.00	B 2.40	3.60 - 4.11	B 4.85	6.67 - 7.42	B 9.10		
			0.48 - 0.53	B .63	1.00 - 1.10	B 1.30	2.01 - 2.28	B 2.65	4.12 - 4.71	B 5.50	7.43 - 8.22	B 10.2		
			0.54 - 0.62	B .71	1.11 - 1.26	B 1.45	2.29 - 2.52	B 3.00	4.72 - 5.19	B 6.25	8.23 - 9.00	B 11.5		
0.63 - 0.69			B .81	1.27 - 1.43	B 1.57	2.53 - 2.79	B 3.30	5.20 - 5.75	B 6.90					
8538 8539 8547 8549 8606 8630 ± 8640 ▲ 8736 8739 8810 8811 8812 8930	B Series A	0 1	0.30 - 0.32	B .44	1.09 - 1.15	B 1.45	3.44 - 3.95	B 4.85	9.48 - 10.0	B 14.	Size 0	13 Amp.		
			0.33 - 0.37	B .51	1.16 - 1.30	B 1.67	3.56 - 4.23	B 5.50	10.1 - 10.9	B 15.5	Max. Full Load Cur.			
			0.38 - 0.42	B .57	1.31 - 1.50	B 1.88	4.24 - 4.50	B 6.25	11.0 - 12.0	B 17.5				
			0.43 - 0.50	B .63	1.51 - 1.73	B 2.0	4.51 - 5.15	B 6.90	12.1 - 13.2	B 19.5	20.2 - 23.1	B 36.		
			0.51 - 0.57	B .71	1.74 - 1.89	B 2.40	5.16 - 5.83	B 7.70	13.3 - 14.3	B 22	23.2 - 24.5	B 40.		
			0.58 - 0.64	B .81	1.90 - 2.12	B 2.65	5.84 - 6.55	B 8.20	14.4 - 15.5	B 25.	24.6 - 27.0	B 45.		
	C Series B	1YD 1PW	0.65 - 0.72	B .92	2.13 - 2.39	B 3.00	6.57 - 7.28	B 9.10	15.6 - 17.9	B 28.0	Size 1	27 Amp.		
			0.73 - 0.81	B 1.03	2.40 - 2.68	B 3.30	7.29 - 7.99	B 10.2	18.0 - 20.1	B 32	Max. Full Load Cur.			
			0.82 - 0.94	B 1.16	2.69 - 3.04	B 3.70	8.00 - 8.32	B 11.5						
			0.95 - 1.08	B 1.30	3.05 - 3.43	B 4.15	8.33 - 9.47	B 12.8						
8940 All Types EXCEPT CA, DA, EA, FA, GA, QC, QD, QE, QF and QG	SB, SC Series A	0, 1 Type S	0.31 - 0.33	B .44	0.86 - 0.99	B 1.30	2.52 - 2.83	B 3.76	6.81 - 7.60	B 10.2	17.3 - 19.4	B 28.0		
			0.34 - 0.36	B .51	1.00 - 1.10	B 1.45	2.84 - 3.29	B 4.15	7.61 - 8.35	B 11.5	Size 0	18 Amp.		
			0.37 - 0.40	B .57	1.11 - 1.28	B 1.67	3.30 - 3.75	B 4.85	8.36 - 9.04	B 12.8	Max. Full Load Cur.			
			0.41 - 0.48	B .63	1.29 - 1.41	B 1.88	3.76 - 4.22	B 5.50	9.05 - 9.99	B 14.	19.5 - 21.7	B 32.		
			0.49 - 0.57	B .71	1.42 - 1.58	B 2.10	4.23 - 4.65	B 6.25	10.0 - 11.1	B 15.5	21.8 - 24.0	B 36.		
			0.58 - 0.64	B .81	1.59 - 1.80	B 2.40	4.66 - 5.16	B 6.90	11.2 - 12.3	B 17.5	24.0 - 27.0	B 40.		
	D Series A	2 2YD 2PW	0.65 - 0.70	B .92	1.81 - 2.03	B 2.65	5.17 - 5.53	B 7.70	12.4 - 13.7	B 19.5	Size 1	27 Amp.		
			0.71 - 0.77	B 1.03	2.04 - 2.25	B 3.00	5.54 - 6.09	B 8.20	13.8 - 15.4	B 22.	Max. Full Load Cur.			
			0.78 - 0.85	B 1.16	2.26 - 2.51	B 3.30	6.10 - 6.80	B 9.10	5.5 - 17.2	B 25.				
			0.31 - 0.35	B .44	0.93 - 1.03	B 1.30	2.66 - 2.97	B 3.70	7.32 - 8.21	B 10.2	20.1 - 22.9	B 36.		
			0.36 - 0.39	B .51	1.04 - 1.19	B 1.45	2.98 - 3.47	B 4.15	8.22 - 9.18	B 11.5	23.0 - 25.8	B 32.		
			0.40 - 0.44	B .57	1.20 - 1.34	B 1.67	3.48 - 3.94	B 4.85	9.19 - 9.99	B 12.8	25.9 - 28.6	B 36.		
D Series A	2 2YD 2PW	0.45 - 0.50	B .63	1.35 - 1.50	B 1.88	3.95 - 4.44	B 5.50	10.0 - 11.0	B 14.	28.7 - 32.2	B 40.			
		0.51 - 0.58	B .71	1.51 - 1.72	B 2.10	4.45 - 4.94	B 6.25	11.1 - 12.4	B 15.5	32.3 - 35.8	B 45.			
		0.59 - 0.65	B .81	1.73 - 1.89	B 2.40	4.95 - 5.52	B 6.90	12.5 - 13.9	B 17.5	35.9 - 40.1	B 50.			
		0.66 - 0.73	B .92	1.90 - 2.14	B 2.65	5.53 - 5.88	B 7.70	14.0 - 15.7	B 19.5	40.2 - 45.0	B 56.			
		0.74 - 0.82	B 1.03	2.15 - 2.36	B 3.00	5.89 - 6.52	B 8.20	15.8 - 17.8	B 22.					
		0.83 - 0.92	B 1.16	2.37 - 2.65	B 3.30	6.53 - 7.31	B 9.10	17.9 - 20.0	B 25.					

NOTE: Series designations listed refer to the marking on the nameplate of the basic open type starter. When the starter is supplied in a controller containing other devices, the controller may have a different Series designation marked on the enclosure nameplate.

‡ Divide the delta connected motor full load current by 1.73, using this quotient, select thermal units from table.

▲ Use full load current of each winding as basis for selection — normally one-half of total motor current.

▲ Includes Form Y28 but not Form Y38. For Type S Form Y38 starters use Table 4.



(Table 3 is continued on next page.)

OVERLOAD RELAY THERMAL UNITS SELECTION TABLES



MELTING ALLOY THERMAL UNITS

FOR USE WITH 1.15 SERVICE FACTOR MOTORS OPERATING UNDER NORMAL CONDITIONS

TABLE 3 (Continued) — AC MAGNETIC STARTERS (LARGE ENCLOSURE)

STANDARD TRIP UNITS

For Use With			Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number
Class	Type	Size										
8536 (Starter Used in Multi-Motor Panels) 8538 8539 8547 8549 8606 8630± 8640▲ 8736 8738 8739 8810 8811 8812 8930 8940	SD Series A	2 Type S	3.37 - 3.82 3.83 - 4.33 4.34 - 4.79	B 4.85 B 5.50 B 6.25	6.28 - 7.03 7.04 - 7.88 7.89 - 8.73	B 9.10 B 10.2 B 11.5	11.9 - 13.1 13.2 - 14.9 15.0 - 16.9	B 17.5 B 19.5 B 22.	24.2 - 26.8 26.9 - 29.9 30.0 - 35.5	B 36. B 40. B 45.	41.4 42.5 42.6 - 45.0	B 66. B 70.
	E Series A	3 3YD 3PW	4.80 - 5.33 5.34 - 5.79 5.80 - 6.27	B 6.90 B 7.70 B 8.20	8.74 - 9.55 9.56 - 10.6 10.7 - 11.8	B 12.8 B 14. B 15.5	17.0 - 18.8 18.9 - 21.5 21.6 - 24.1	B 25. B 28.0 B 32.	35.6 - 36.5 36.6 - 39.6 39.7 - 41.3	B 50. B 56. B 62.		
	SE Series A	3 Poly-Phase Type S	14.4 - 15.7 15.8 - 18.6 18.7 - 21.4 21.5 - 24.3	C 20. C 22. C 26. C 30.	24.4 - 28.6 28.7 - 30.1 30.2 - 32.2 32.3 - 36.5	C 34. C 40. C 42. C 45.	36.6 - 41.5 41.6 - 47.3 47.4 - 53.7 53.8 - 59.4	C 51. C 58. C 66. C 75.	59.5 - 64.3 64.4 - 73.5 73.6 - 81.3 81.4 - 90.0	C 83. C 90. C 103. C 114.		
	F Series C	4 4YD 4PW	15.1 - 16.2 16.3 - 17.3 17.4 - 19.5	CC 20.9 CC 22.8 CC 24.6	24.1 - 25.7 25.8 - 27.5 27.6 - 29.6	CC 33.3 CC 36.4 CC 39.6	36.7 - 39.3 39.4 - 42.3 42.4 - 44.9	CC 54.5 CC 59.4 CC 64.3	55.6 - 59.9 60.0 - 64.2 64.3 - 68.7	CC 87.7 CC 94.0 CC 103.	78.1 - 80.7 80.8 - 84.6 84.7 - 87.7	CC 143. CC 156. CC 167.
			19.6 - 20.7 20.8 - 22.3 22.4 - 24.0	CC 26.3 CC 28.8 CC 31.0	29.7 - 31.7 31.8 - 33.9 34.0 - 36.6	CC 42.7 CC 45.6 CC 50.1	45.0 - 48.3 48.4 - 50.9 51.0 - 55.5	CC 68.5 CC 74.6 CC 81.6	68.8 - 71.4 71.5 - 74.8 74.9 - 78.0	CC 112. CC 121. CC 132.	87.8 90.0	CC 180.
			45.5 - 48.2 48.3 - 52.2 52.3 - 56.0	CC 64.3 CC 68.5 CC 74.6	56.9 - 61.0 61.1 - 66.0 66.1 - 71.7	CC 81.5 CC 87.7 CC 94.0	71.8 - 76.7 76.8 - 83.1 83.2 - 89.2	CC 103. CC 112. CC 121.	89.3 - 96.5 96.6 - 104. 105 - 112.	CC 132. CC 143. CC 156.	113. 121. 122. 135.	CC 167. CC 180.
	G Series B	5 5YD 5PW	87.4 - 92.9 93.0 - 100. 101 - 108.	DD 112. DD 121. DD 128.	109 - 119. 120 - 128. 129 - 144.	DD 140. DD 150. DD 160.	145 - 163. 164 - 187. 188 - 207.	DD 185. DD 220. DD 250.	208 - 229. 230 - 270.	DD 280. DD 300.		
	H Series A	6†	173 - 190. 191 - 217.	B 1.30 B 1.45	218 - 246. 247 - 274.	B 1.67 B 1.88	275 - 313. 314 - 346.	B 2.10 B 2.40	347 - 380. 381 - 424.	B 2.65 B 3.00	425. 477 478. 540.	B 3.30 B 3.70
	J Series A	7†	286 - 325. 326 - 368.	B 1.45 B 1.67	369 - 412. 413 - 469.	B 1.88 B 2.10	470 - 519. 520 - 571.	B 2.40 B 2.65	572 - 637. 638 - 716.	B 3.00 B 3.30	717. 799. 800. 810.	B 3.70 B 4.15
	K Series A	8†	340 - 383. 384 - 431. 432 - 475.	B 1.03 B 1.16 B 1.30	476 - 543. 544 - 615. 616 - 687.	B 1.45 B 1.67 B 1.88	688 - 784. 785 - 867. 868 - 951.	B 2.10 B 2.40 B 2.65	952 - 1064. 1065 - 1191. 1192 - 1215.	B 3.00 B 3.30 B 3.70		

NOTE: Series designations listed refer to the marking on the nameplate of the basic open type starter. When the starter is supplied in a controller containing other devices, the controller may have a different Series designation marked on the enclosure nameplate.

± Divide the delta connected motor full load current by 1.73, using this quotient select thermal units from table.

▲ Use full load current of each winding as basis for selection — normally one-half of total motor current.

● Includes Form Y28 but not Form Y38. For Type S Form Y38 starters use Table 4.

† Overload relays operate from secondary of a current transformer. Current Transformer Ratio: Size 6 — 800:5
Size 7 — 1200:5
Size 8 — 2000:5

TABLE 4 — SEPARATELY MOUNTED OVERLOAD RELAYS

STANDARD TRIP UNITS

For Use With			Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number
Class	Type	Size										
9055	CG, CO Series A	25 Amp.	0.34 - 0.38 0.39 - 0.43 0.44 - 0.48	B 0.44 B 0.51 B 0.57	0.89 - 0.99 1.00 - 1.10 1.11 - 1.26	B 1.16 B 1.30 B 1.45	2.29 - 2.52 2.53 - 2.87 2.88 - 3.28	B 3.00 B 3.30 B 3.70	5.92 - 6.25 6.26 - 6.83 6.84 - 7.65	B 7.70 B 8.20 B 9.10	12.5 - 14.1 14.2 - 15.7 15.8 - 17.9	B 17.5 B 19.5 B 22.
			0.49 - 0.53 0.54 - 0.62 0.63 - 0.69	B 0.63 B 0.71 B 0.81	1.27 - 1.43 1.44 - 1.59 1.60 - 1.81	B 1.67 B 1.88 B 2.10	3.29 - 3.75 3.76 - 4.27 4.28 - 4.77	B 4.15 B 4.85 B 5.50	7.66 - 8.55 8.56 - 9.56 9.57 - 10.3	B 10.2 B 11.5 B 12.8	18.0 - 20.1 20.2 - 22.5 22.6 - 25.0	B 25. B 28.0 B 32.
			0.70 - 0.78 0.79 - 0.88	B 0.92 B 1.03	1.82 - 2.00 2.01 - 2.28	B 2.40 B 2.65	4.78 - 5.27 5.28 - 5.91	B 6.25 B 6.90	10.4 - 11.3 11.4 - 12.4	B 14. B 15.5		
	B, C No Series	30 Amp. Over-load Breaker	0.31 - 0.35 0.36 - 0.39 0.40 - 0.44	B 0.44 B 0.51 B 0.57	0.83 - 0.92 0.93 - 1.03 1.04 - 1.19	B 1.16 B 1.30 B 1.45	2.15 - 2.36 2.37 - 2.65 2.66 - 2.97	B 3.00 B 3.30 B 3.70	5.53 - 5.87 5.88 - 6.52 6.53 - 7.31	B 7.70 B 8.20 B 9.10	12.5 - 13.9 14.0 - 15.7 15.8 - 17.8	B 17.5 B 19.5 B 22.
			0.45 - 0.50 0.51 - 0.58 0.59 - 0.65	B 0.63 B 0.71 B 0.81	1.20 - 1.34 1.35 - 1.50 1.51 - 1.72	B 1.67 B 1.88 B 2.10	2.98 - 3.56 3.57 - 3.94 3.95 - 4.44	B 4.15 B 4.85 B 5.50	7.32 - 8.20 8.21 - 9.19 9.20 - 9.99	B 10.2 B 11.5 B 12.8	17.9 - 20.0 20.1 - 22.9 23.0 - 25.7	B 25. B 28.0 B 32.
			0.66 - 0.73 0.74 - 0.82	B 0.92 B 1.03	1.73 - 1.89 1.90 - 2.14	B 2.40 B 2.65	4.45 - 4.94 4.95 - 5.52	B 6.25 B 6.90	10.0 - 11.0 11.1 - 12.4	B 14. B 15.5	25.8 - 28.6 28.7 - 30.0	B 36. B 40.
	SEG, SEO, SMO Series A	30 Amp.	0.34 - 0.38 0.39 - 0.43 0.44 - 0.47	B 0.44 B 0.51 B 0.57	0.87 - 0.97 0.98 - 1.07 1.08 - 1.23	B 1.16 B 1.30 B 1.45	2.16 - 2.41 2.42 - 2.71 2.72 - 3.03	B 3.00 B 3.30 B 3.70	5.60 - 5.95 5.96 - 6.58 6.59 - 7.31	B 7.70 B 8.20 B 9.10	12.2 - 13.5 13.6 - 15.1 15.2 - 17.0	B 17.5 B 19.5 B 22.
			0.48 - 0.53 0.54 - 0.60 0.61 - 0.68	B 0.63 B 0.71 B 0.81	1.24 - 1.39 1.40 - 1.55 1.56 - 1.77	B 1.67 B 1.88 B 2.10	3.04 - 3.53 3.54 - 4.01 4.02 - 4.56	B 4.15 B 4.85 B 5.50	7.32 - 8.15 8.16 - 9.13 9.14 - 9.91	B 10.2 B 11.5 B 12.8	17.1 - 18.9 19.0 - 21.5 21.6 - 24.0	B 25. B 28.0 B 32.
			0.69 - 0.76 0.77 - 0.86	B 0.92 B 1.03	1.78 - 1.96 1.97 - 2.15	B 2.40 B 2.65	4.57 - 5.03 5.04 - 5.59	B 6.25 B 6.90	9.92 - 10.7 10.8 - 12.1	B 14. B 15.5	24.1 - 26.8 26.9 - 30.0	B 36. B 40.
		50 Amp. ±	3.46 - 3.90 3.91 - 4.44 4.45 - 4.91	B 4.85 B 5.50 B 6.25	5.85 - 6.54 6.55 - 7.33 7.34 - 8.31	B 8.20 B 9.10 B 10.2	10.1 - 11.2 11.3 - 12.5 12.6 - 14.2	B 14. B 15.5 B 17.5	18.5 - 20.5 20.6 - 23.2 23.3 - 26.6	B 25. B 28.0 B 32.	33.6 - 37.2 37.3 - 41.9 42.0 - 46.3	B 45. B 50. B 56.
			4.92 - 5.51 5.52 - 5.84	B 6.90 B 7.70	8.32 - 9.22 9.23 - 10.0	B 11.5 B 12.8	14.3 - 16.1 16.2 - 18.4	B 19.5 B 22.	26.7 - 29.6 29.7 - 33.5	B 36. B 40.	46.4 - 48.7 48.8 - 50.0	B 62. B 66.

● Table also applies for Class 8536 or 8736 Type SB or SC Form Y38 starters.

± Table also applies for Class 8536 or 8736 Type SD Form Y38 starters.



SELECTION
TABLES

OVERLOAD RELAY THERMAL UNITS

MELTING ALLOY THERMAL UNITS

FOR USE WITH 1.15 SERVICE FACTOR MOTORS OPERATING UNDER NORMAL CONDITIONS



TABLE 4 (Continued) — SEPARATELY MOUNTED OVERLOAD RELAYS

STANDARD TRIP UNITS

For Use With			Motor Full Load Current		Thermal Unit Number	Motor Full Load Current		Thermal Unit Number	Motor Full Load Current		Thermal Unit Number	Motor Full Load Current		Thermal Unit Number	Motor Full Load Current		Thermal Unit Number
Class	Type	Size															
9065	SEG, SEO Series A	100 Amp. 2 or 3 Thermal Units	15.1 - 16.2	CC 20.9	22.3	24.0	CC 31.0	32.6	35.1	CC 46.6	47.3	51.1	CC 68.5	69.6 - 75.0	CC 103		
			16.3 - 17.5	CC 22.8	24.1	25.7	CC 33.3	35.2	38.0	CC 50.1	51.2	55.8	CC 74.6	75.1 - 78.1	CC 112		
			17.6 - 19.1	CC 24.6	25.8	27.8	CC 36.4	38.1	41.1	CC 54.5	55.9	59.5	CC 81.5	78.2 - 82.3	CC 121		
			19.2 - 20.7	CC 26.3	27.9	30.1	CC 39.6	41.2	44.0	CC 59.4	59.6	64.5	CC 87.7	82.4 - 86.8	CC 132		
	TG, TO Series A	50 Amp.	0.31 - 0.35	B 0.44	0.93	1.03	B 1.30	2.66	2.97	B 3.70	7.32	8.21	B 10.2	20.1	22.9	B 28.0	
			0.36 - 0.39	B 0.51	1.04	1.19	B 1.45	2.98	3.47	B 4.15	8.22	9.18	B 11.5	23.0	25.7	B 32.	
			0.40 - 0.44	B 0.57	1.20	1.34	B 1.67	3.48	3.94	B 4.85	9.19	9.90	B 12.8	25.8	28.6	B 36.	
			0.45 - 0.50	B 0.63	1.35	1.50	B 1.88	3.95	4.44	B 5.50	10.0	11.0	B 14.	28.7	32.2	B 40.	
	UG, UO No Series	100 Amp.	0.51 - 0.58	B 0.71	1.51	1.67	B 2.10	4.45	4.94	B 6.25	11.1	12.4	B 15.5	32.3	35.8	B 45.	
			0.59 - 0.65	B 0.81	1.68	1.89	B 2.40	4.95	5.52	B 6.90	12.5	13.9	B 17.5	35.9	40.1	B 50.	
			0.66 - 0.73	B 0.92	1.90	2.14	B 2.65	5.53	5.88	B 7.70	14.0	15.7	B 19.5	40.2	44.4	B 56.	
			0.74 - 0.82	B 1.03	2.15	2.36	B 3.00	5.89	6.52	B 8.20	15.8	17.8	B 22.	44.5 - 50.0	B 62.		
	FG, FO Series B	150 Amp.	0.83 - 0.92	B 1.16	2.37	2.65	B 3.30	6.53	7.31	B 9.10	17.9	20.0	B 25.				
			15.3 - 16.7	C 20.	25.9	30.4	C 34.	38.9	44.2	C 51.	63.3	68.6	C 83.				
			16.8 - 19.8	C 22.	30.5	31.9	C 40.	44.3	50.2	C 58.	68.7	78.6	C 90.				
			19.9 - 22.8	C 26.	32.0	34.2	C 42.	50.3	57.1	C 66.	78.7	86.9	C 103.				
	GG, GO Series A	300 Amp.	22.9 - 25.8	C 30.	34.3	38.8	C 45.	57.2	63.2	C 75.	87.0	100.	C 114.				
			43.6 - 47.3	CC 54.5	54.7	59.7	CC 68.5	70.2	75.1	CC 87.7	89.3	96.5	CC 112.	114.	123.	CC 143	
			47.4 - 51.3	CC 59.4	59.8	65.1	CC 74.6	75.2	82.2	CC 94.0	96.6	104.	CC 121.	124.	132.	CC 156.	
			51.4 - 54.6	CC 64.3	65.2	70.1	CC 81.5	82.3	89.2	CC 103.	105.	113.	CC 132.	133.	150.	CC 167.	
			38.5 - 40.7	DD 48.	57.6	62.6	DD 68.	85.5	91.9	DD 105	132.	139.	DD 150.	190.	209.	DD 230.	
			40.8 - 44.9	DD 51.	62.7	67.6	DD 73.	92.0	100.	DD 112.	140.	156.	DD 160.	210.	225.	DD 250.	
			45.0 - 49.3	DD 55.	67.7	72.9	DD 79.	131.	109.	DD 121.	157.	166.	DD 185.	226.	238.	DD 265.	
			49.4 - 52.8	DD 59.	73.0	79.4	DD 91.	110	119.	DD 128.	167.	180.	DD 213.	239.	263.	DD 280.	
			52.9 - 57.5	DD 63.	79.5	86.4	DD 98.	120	131	DD 140.	181.	189.	DD 220.	264.	300.	DD 300.	

†Table also applies for Class 8536 or 8736 Type SB or SC Form Y38 starters

‡Table also applies for Class 8536 or 8736 Type SD Form Y38 starters.

TABLE 5 — AC MAGNETIC STARTERS (SMALL ENCLOSURE)

SLOW TRIP UNITS

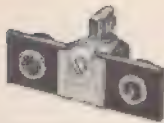
For Use With			Motor Full Load Current		Thermal Unit Number	Motor Full Load Current		Thermal Unit Number	Motor Full Load Current		Thermal Unit Number	Motor Full Load Current		Thermal Unit Number	Motor Full Load Current		Thermal Unit Number
Class†	Type	Size															
8536 (Starter in Own Enclosure) QMB Panel	B Series A	0	0.47 - 0.49	JB .81	1.36 - 1.54	JB 2.4	4.28 - 4.63	JB 6.9	9.66	10.6	JB 17.5	Size 0 — 18 Amp. Max. Full Load Cur.					
			0.50 - 0.57	JB .92	1.55 - 1.68	JB 2.65	4.61 - 5.10	JB 7.7	10.7	12.2	JB 19.5						
			0.58 - 0.65	JB 1.03	1.69 - 1.95	JB 3.0	5.11 - 5.28	JB 8.2	12.3	13.1	JB 22.						
			0.56 - 0.76	JB 1.16	1.96 - 2.25	JB 3.3	5.29 - 5.93	JB 9.1	13.2	14.8	JB 25.						
	C Series B	1	0.77 - 0.85	JB 1.3	2.26 - 2.60	JB 3.7	5.91 - 6.58	JB 10.2	14.9	16.2	JB 28.						
			0.86 - 0.98	JB 1.45	2.61 - 3.00	JB 4.15	6.59 - 7.22	JB 11.5	16.3	17.8	JB 32.						
			0.99 - 1.14	JB 1.67	3.01 - 3.45	JB 4.85	7.23 - 8.05	JB 12.8	17.9	18.2	JB 36.						
			1.15 - 1.20	JB 1.88	3.46 - 3.84	JB 5.5	8.06 - 8.45	JB 14.0									
	SB, SC Series A	0, 1 Type S	1.21 - 1.35	JB 2.1	3.85 - 4.27	JB 6.25	8.47 - 9.65	JB 15.5									
			0.52 - 0.58	JB .81	1.32 - 1.49	JB 2.1	3.45 - 3.85	JB 5.5	7.87	8.59	JB 12.8	Size 0 — 18 Amp. Max. Full Load Cur.					
			0.59 - 0.65	JB .92	1.50 - 1.66	JB 2.4	3.86 - 4.27	JB 6.25	8.60	9.46	JB 14.0						
			0.56 - 0.74	JB 1.03	1.67 - 1.86	JB 2.65	4.28 - 4.74	JB 6.9	9.47	10.4	JB 15.5						
	8598 8599 (Model 3 Control Center) QMB Panel	2	0.75 - 0.82	JB 1.16	1.87 - 2.05	JB 3.0	4.75 - 5.04	JB 7.7	10.5	11.7	JB 17.5						
			0.93 - 0.91	JB 1.3	2.06 - 2.31	JB 3.3	5.05 - 5.63	JB 8.2	11.8	13.4	JB 19.5						
			0.92 - 1.05	JB 1.45	2.32 - 2.57	JB 3.7	5.61 - 6.27	JB 9.1	13.5	15.1	JB 22.						
			1.06 - 1.17	JB 1.67	2.58 - 3.01	JB 4.15	6.28 - 7.09	JB 10.2	15.2	17.1	JB 25.						
	D Series A	2	1.18 - 1.31	JB 1.88	3.02 - 3.44	JB 4.85	7.10 - 7.85	JB 11.5	17.2	19.5	JB 28.						
			2.82 - 3.22	JB 4.15	4.96 - 5.43	JB 7.7	8.09 - 9.02	JB 12.8	13.9	15.7	JB 22.						
			3.23 - 3.62	JB 4.85	5.44 - 5.73	JB 8.2	9.03 - 9.74	JB 14.0	15.8	18.2	JB 25.						
			3.63 - 4.03	JB 5.5	5.74 - 6.43	JB 9.1	9.75 - 11.1	JB 15.5	18.3	21.1	JB 28.						
	SD Series A	2 Type S	4.04 - 4.44	JB 6.25	6.44 - 7.31	JB 10.2	11.2 - 12.0	JB 17.5	21.2	24.2	JB 32.						
			4.45 - 4.95	JB 6.9	7.32 - 8.08	JB 11.5	12.1 - 13.8	JB 19.5	24.3	25.9	JB 36.						
			2.61 - 3.01	JB 4.15	4.97 - 5.47	JB 8.2	5.06 - 10.0	JB 15.5	18.0	19.9	JB 32.						
			3.02 - 3.39	JB 4.85	5.48 - 6.09	JB 9.1	10.1 - 11.0	JB 17.5	20.0	22.0	JB 36.						
			3.40 - 3.82	JB 5.5	6.10 - 6.82	JB 10.2	11.1 - 12.5	JB 19.5	22.1	24.6	JB 40.						
			3.83 - 4.20	JB 6.25	6.83 - 7.49	JB 11.5	12.6 - 14.1	JB 22.	24.7 - 27.1		JB 45.						
			4.21 - 4.65	JB 6.9	7.50 - 8.06	JB 12.8	14.2 - 15.8	JB 25.	27.2 - 30.1		JB 50.						
			4.66 - 4.96	JB 7.7	8.07 - 9.05	JB 14.0	15.9 - 17.9	JB 28.	30.2 - 33.3		JB 56.						

▲For use with motors having a long accelerating time (approximately 10 to 20 seconds on a full voltage start).

†For selection of slow trip thermal units in devices not listed here, refer to Square D.



OVERLOAD RELAY THERMAL UNITS SELECTION TABLES



MELTING ALLOY THERMAL UNITS

FOR USE WITH 1.15 SERVICE FACTOR MOTORS OPERATING UNDER NORMAL CONDITIONS

TABLE 6 — AC MAGNETIC STARTERS (SMALL ENCLOSURE)

QUICK TRIP UNITS*

For Use With			Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number	
Class▲	Type	Size											
8536 (Starter in Own Enclosure) 8993 (Model 3 Control Center) QMB Panel	B Series A	0	2.59 - 2.84	FB 4.1	5.58 - 5.75	FB 8.6	9.57 - 10.0	FB 14.8	16.1 - 17.2	FB 24.8	21.8 - 22.3	FB 34.1	
			2.85 - 3.04	FB 4.5	5.76 - 6.15	FB 9.0	10.1 - 10.7	FB 15.6	17.3 - 18.3	FB 26.7	22.4 - 23.1	FB 35.	
			3.05 - 3.39	FB 4.75	6.16 - 6.48	FB 9.5	10.8 - 11.4	FB 16.4			23.2 - 24.0	FB 36.6	
		1	3.40 - 3.89	FB 5.3	6.49 - 6.83	FB 10.	11.5 - 12.0	FB 17.6	Size 0 — 18 Amp. Max. Full Load Cur.		24.1 - 25.3	FB 38.3	
			3.90 - 4.31	FB 6.1	6.84 - 7.23	FB 10.6	12.1 - 12.7	FB 18.4	18.4 - 18.9	FB 28.3	25.4 - 26.5	FB 40.2	
			4.32 - 4.79	FB 6.75	7.24 - 7.57	FB 11.2	12.8 - 13.7	FB 19.4			26.6 - 27.0	FB 42.	
	C Series B		4.80 - 5.03	FB 7.45	7.58 - 8.32	FB 12.1	13.8 - 14.6	FB 21.1	Size 1 — 27 Amp. Max. Full Load Cur.		20.3 - 21.5	FB 30.5	
			5.04 - 5.28	FB 7.8	8.33 - 8.96	FB 13.1	14.7 - 15.3	FB 22.6	19.0 - 19.5	FB 29.6	21.6 - 22.4	FB 32.6	
			5.29 - 5.57	FB 8.21	8.97 - 9.56	FB 13.9	15.4 - 16.0	FB 23.6	19.6 - 20.7	FB 30.5	22.5 - 23.2	FB 34.1	
		SE, SC Series A	0, 1 Type S	2.23 - 2.47	FB 3.33	5.40 - 5.69	FB 7.8	8.50 - 8.99	FB 13.1	14.8 - 15.2	FB 22.6	23.3 - 24.3	FB 35.
				2.48 - 2.76	FB 3.71	5.70 - 5.99	FB 8.21	9.00 - 9.59	FB 13.9	15.3 - 16.2	FB 23.6	24.4 - 25.4	FB 36.6
				2.77 - 3.04	FB 4.1	6.00 - 6.29	FB 8.6	9.60 - 10.1	FB 14.8	16.3 - 17.4	FB 24.8	25.5 - 27.0	FB 38.3
D Series A			3.05 - 3.24	FB 4.5	6.30 - 6.64	FB 9.0	10.2 - 10.6	FB 15.6	Size 0 — 18 Amp. Max. Full Load Cur.		20.3 - 21.5	FB 30.5	
			3.25 - 3.61	FB 4.75	6.65 - 6.99	FB 9.5	10.7 - 11.3	FB 16.4	17.5 - 18.5	FB 26.7	21.6 - 22.4	FB 32.6	
			3.62 - 4.19	FB 5.3	7.00 - 7.39	FB 10.	11.4 - 11.9	FB 17.6			22.5 - 23.2	FB 34.1	
	2	4.20 - 4.62	FB 6.1	7.40 - 7.79	FB 10.6	12.0 - 12.6	FB 18.4	Size 1 — 27 Amp. Max. Full Load Cur.			23.3 - 24.3	FB 35.	
		4.63 - 5.14	FB 6.75	7.80 - 7.94	FB 11.2	12.7 - 13.8	FB 19.4	18.6 - 19.6	FB 28.3	24.4 - 25.4	FB 36.6		
		5.15 - 5.39	FB 7.45	7.95 - 8.49	FB 12.1	13.9 - 14.7	FB 21.1	19.7 - 20.2	FB 29.6	25.5 - 27.0	FB 38.3		
8536 (Starter in Own Enclosure) 8993 (Model 3 Control Center) QMB Panel	D Series A	2	10.6 - 10.8	FB 14.8	15.4 - 15.7	FB 21.1	22.0 - 22.4	FB 29.6	28.0 - 29.1	FB 38.3	36.8 - 38.3	FB 50.5	
			10.9 - 11.5	FB 15.6	15.8 - 16.4	FB 22.6	22.5 - 23.6	FB 30.5	29.2 - 30.7	FB 40.2	38.4 - 40.2	FB 52.5	
			11.6 - 12.4	FB 16.4	16.5 - 17.9	FB 23.6	23.7 - 24.2	FB 32.6	30.8 - 31.8	FB 42.	40.3 - 45.0	FB 55.5	
			12.5 - 13.1	FB 17.6	18.0 - 19.1	FB 24.8	24.3 - 25.7	FB 34.1	31.9 - 33.5	FB 44.			
			13.2 - 13.6	FB 18.4	19.2 - 20.7	FB 26.7	25.8 - 26.9	FB 35.	33.6 - 35.1	FB 46.			
			13.7 - 15.3	FB 19.4	20.8 - 21.9	FB 28.3	27.0 - 27.9	FB 36.6	35.2 - 36.7	FB 48.			
	SD Series A	2 Type S	3.22 - 3.57	FB 4.75	6.59 - 6.91	FB 9.5	11.2 - 12.0	FB 16.4	20.2 - 21.0	FB 28.3	30.5 - 32.0	FB 42.	
			3.58 - 4.14	FB 5.3	6.92 - 7.41	FB 10.	12.1 - 12.7	FB 17.6	21.1 - 21.6	FB 29.6	32.1 - 33.3	FB 44.	
			4.15 - 4.56	FB 6.1	7.42 - 7.82	FB 10.6	12.8 - 13.5	FB 18.4	21.7 - 23.3	FB 30.5	33.4 - 35.2	FB 46.	
			4.57 - 5.10	FB 6.75	7.83 - 8.32	FB 11.2	13.6 - 14.6	FB 19.4	23.4 - 24.3	FB 32.6	35.3 - 37.0	FB 48.	
			5.11 - 5.39	FB 7.45	8.33 - 8.89	FB 12.1	14.7 - 15.7	FB 21.1	24.4 - 25.0	FB 34.1	37.1 - 38.5	FB 50.5	
			5.40 - 5.64	FB 7.8	8.90 - 9.47	FB 13.1	15.8 - 16.5	FB 22.6	25.1 - 26.3	FB 35.	38.6 - 40.7	FB 52.5	
E Series A	3†	5.65 - 5.96	FB 8.21	9.48 - 10.0	FB 13.9	16.6 - 17.4	FB 23.6	26.4 - 27.6	FB 36.6	40.8 - 42.9	FB 55.5		
		5.97 - 6.25	FB 8.6	10.1 - 10.5	FB 14.8	17.5 - 18.8	FB 24.8	27.7 - 29.1	FB 38.3	43.0 - 44.4	FB 58.		
		6.26 - 6.58	FB 9.0	10.6 - 11.1	FB 15.6	18.9 - 20.1	FB 26.7	29.2 - 30.4	FB 40.2	44.5 - 45.0	FB 60.		
	4†	20.5 - 21.6	FB 26.7	28.0 - 29.7	FB 34.1	40.2 - 42.6	FB 46.	52.1 - 54.5	FB 58.	78.6 - 90.0	FB 84.		
		21.7 - 23.1	FB 28.3	29.8 - 33.1	FB 38.3	42.7 - 45.4	FB 48.	54.6 - 57.1	FB 60.				
		23.2 - 24.6	FB 29.6	33.2 - 35.4	FB 40.2	45.5 - 47.6	FB 50.5	57.2 - 62.7	FB 63.5				
8536 (Starter in Own Enclosure) 8940 only Types CA, DA, EA, FA, GA, QC, QD, QE QF & QG	F Series C	4†	24.7 - 26.2	FB 30.5	35.5 - 37.7	FB 42.	47.7 - 50.1	FB 52.5	62.8 - 70.7	FB 69.			
			26.3 - 27.9	FB 32.6	37.8 - 40.1	FB 44.	50.2 - 52.0	FB 55.5	70.8 - 78.5	FB 77.			
			21.0 - 22.3	FB 26.7	29.4 - 31.3	FB 34.1	41.3 - 44.1	FB 46.	57.2 - 61.1	FB 58.	97.6 - 105.	FB 84.	
		22.4 - 23.9	FB 28.3	31.4 - 33.9	FB 38.3	44.2 - 46.9	FB 48.	61.2 - 65.7	FB 60.	106. - 116.	FB 92.		
		24.0 - 25.7	FB 29.6	34.0 - 36.1	FB 40.2	47.0 - 50.2	FB 50.5	65.8 - 74.5	FB 63.5	117. - 135.	FB 105.		
			25.8 - 27.3	FB 30.5	36.2 - 38.7	FB 42.	50.3 - 53.3	FB 52.5	74.6 - 86.4	FB 69.			
	27.4 - 29.3		FB 32.6	38.8 - 41.2	FB 44.	53.4 - 57.1	FB 55.5	86.5 - 97.5	FB 77.				
	20.5 - 21.6		FB 26.7	28.0 - 29.7	FB 34.1	40.2 - 42.6	FB 46.	52.1 - 54.5	FB 58.	78.6 - 90.0	FB 84.		
	21.7 - 23.1	FB 28.3	29.8 - 33.1	FB 38.3	42.7 - 45.4	FB 48.	54.6 - 57.1	FB 60.					
	23.2 - 24.6	FB 29.6	33.2 - 35.4	FB 40.2	45.5 - 47.6	FB 50.5	57.2 - 62.7	FB 63.5					

*For use with hermetically sealed motors or motors with extremely short allowable locked rotor time. Most hermetic compressor and submersible pump manufacturers publish a listing of Type FB units to be used with their equipment. This table may be used when specific recommendations are not available.

†Overload relays on Size 3 and 4 starters must be modified to accept Type FB units. When ordering starter, specify Form Y21 (Size 3) or Form Y81 (Size 4) to obtain this modification.

▲For selection of quick trip thermal units in devices not listed here, refer to Square D.

AC MAGNETIC STARTERS — LINE VOLTAGE WITH BIMETALLIC TYPE THERMAL OVERLOAD RELAYS

Bimetallic overload relays are available for applications where automatic reset is required, as in applications where devices are mounted in a location not easily accessible for manual operation. The relay contacts, after opening as a result of an overload, will automatically reclose when the relay has cooled down. However, automatic reset should not normally be used with 2-wire control because of the possibility of danger to personnel by unexpected starting of a machine. Further, unless the cause of the overload is removed the repeated cycling of the motor will eventually result in motor burn out. In addition to being easily adjusted to trip within a range of 85% to 115%, bimetallic overload relays are field convertible from automatic reset to hand reset.

Class 8536 Types B through K are available with bimetallic overload relays. Class 8536 Type S magnetic starters with bimetallic overload relays will be offered in two versions, ambient temperature-compensated and non-compensated. The ambient temperature-compensated version is available with three thermal units only. The non-compensated version is available with two or three thermal units. In both the ambient temperature-compensated and non-compensated versions a thermal unit must be installed in each available relay pole and wired so that each pole carries full motor current. The Type S starter with bimetallic overload can only be mounted in the vertical position such that the control circuit terminals extend down from the starter. If horizontal position is desired, order by specifying Form Y28. Refer to selection Table 10 on Page 224 for thermal unit selection. Consult field office for availability and ordering information.

THERMAL UNIT PRICES

Price of thermal units is normally included in the price of the controller. However, when thermal units are purchased separately, the prices at right apply.

Standard Trip Unit	Price
Types AF, AR, AU, each	\$1.50



SELECTION
TABLES

OVERLOAD RELAY THERMAL UNITS

BIMETALLIC THERMAL UNITS

FOR USE WITH 1.15 SERVICE FACTOR MOTORS OPERATING UNDER NORMAL CONDITIONS



TABLE 7 — AC MAGNETIC STARTERS (SMALL ENCLOSURE)

STANDARD TRIP UNITS — NON-COMPENSATED

For Use With			Motor Full Load Current		Thermal Unit Number		Motor Full Load Current		Thermal Unit Number		Motor Full Load Current		Thermal Unit Number		Motor Full Load Current		Thermal Unit Number	
Class	Type	Size																
8536 (Starter in Own Enclosure) 8940 only, Types CA, DA, EA, FA, GA, QC, QD, QE, QF, and QG 8998 8999 (Model 3 Control Center) QMB Panel	Series A	0	0.30	0.32	AR .45	1.09	1.18	AR 1.53	3.74	4.10	AR 5.3	13.4	14.7	AR 20.5	Size 1 — 27 Amp. Max. Full Load Cur.			
			0.33	0.36	AR .49	1.19	1.31	AR 1.68	4.11	4.51	AR 5.8	14.8	16.5	AR 23.				
			0.37	0.39	AR .54	1.32	1.43	AR 1.85	4.52	5.04	AR 6.4	16.6	18.4	AR 27.				
		0.40	0.43	AR .59	1.44	1.58	AR 2.04	5.05	5.44	AR 7.0	Size 0 — 18 Amp. Max. Full Load Cur.				27.2 — 28.4	AR 55.		
		0.44	0.48	AR .65	1.59	1.74	AR 2.24	5.45	5.97	AR 7.7					28.5 — 28.9	AR 60.		
		0.49	0.52	AR .71	1.75	1.91	AR 2.46	5.98	6.57	AR 8.5					29.0 — 30.1	AR 66.		
	Series B	1P	0.53	0.58	AR .78	1.92	2.11	AR 2.71	6.58	7.23	AR 9.3	18.5	20.2	AR 30.	30.2 — 36.0	AR 72.		
			0.59	0.66	AR .86	2.12	2.31	AR 2.98	7.24	7.95	AR 10.2	20.3 — 22.4	AR 35.					
			0.67	0.74	AR .95	2.32	2.56	AR 3.28	7.96	8.76	AR 11.2	22.5 — 24.1	AR 40.	Size 1P — 36 Amp. Max. Full Load Cur.				
		0.75	0.81	AR 1.05	2.57	2.81	AR 3.62	8.77	9.37	AR 12.4	24.2 — 24.8	AR 44.						
		0.82	0.88	AR 1.15	2.82	3.09	AR 3.98	9.39	10.4	AR 13.6	24.9 — 26.2	AR 47.						
		0.89	0.97	AR 1.26	3.10	3.39	AR 4.37	10.5	11.8	AR 15.4	26.3 — 27.1	AR 51.						
	Series A	2	0.98	1.08	AR 1.39	3.40	3.73	AR 4.80	11.9	13.3	AR 17.6							
			6.54	7.17	AR 9.3	9.57	10.6	AR 13.6	15.8	18.5	AR 23.	26.9 — 29.4	AR 40.	36.1	38.7	AR 55.		
			7.18	7.87	AR 10.2	10.7	12.1	AR 15.4	18.6	20.3	AR 27	29.5 — 31.1	AR 44.	38.8	45.0	AR 60.		
		7.38	8.72	AR 11.2	12.2	14.2	AR 17.6	20.4	23.6	AR 30.	31.2 — 33.8	AR 47.						
		8.73	9.56	AR 12.4	14.3	15.7	AR 20.5	23.7	26.8	AR 35.	33.9 — 36.0	AR 51.						
		Series A	3	13.6	15.5	AU 20.	22.2	25.1	AU 33.	32.8	36.1	AU 50.	51.1	56.8	AU 81.	79.6 — 90.0	AU 123.	
15.6	17.4			AU 23.	25.2	26.5	AU 38.	36.2	40.8	AU 56.	56.9	63.9	AU 88.					
17.5	19.4			AU 26.	26.6	28.8	AU 40.	40.9	45.3	AU 64.	64.0	71.1	AU 99.					
19.5	22.1		AU 29.	28.9	32.7	AU 44.	45.4	51.0	AU 72.	71.2	79.5	AU 110						
42.2	47.0		AU 56.	57.6	64.9	AU 81.	77.4	85.5	AU 110	101.	108.	AU 152.						
47.1	52.0		AU 64	65.0	72.0	AU 88.	85.6	91.9	AU 123.	109.	116.	AU 183.						
Series C	4	52.1	57.5	AU 72	72.1	77.3	AU 99.	92.0	100.	AU 135.	117.	135.	AU 198.					
		85.7	99.2	AF 135.	115.	127.	AF 159	148.	164.	AF 188.	188	198.	AF 220.	214. — 236.	AF 260.			
		99.4	114.	AF 150.	128.	147.	AF 168	165. — 187.	AF 205.	199.	213.	AF 240.	237. — 270.	AF 288.				
	Series B	5																
H, J, K Series A	6, 7, 8																	

Consult Your Square D Field Office

Consult Your Square D Field Office

Overload relays operate from secondary of a current transformer except Classes 8547, 8549, 8606 and 8630 which use magnetic type overload relays.

Current Transformer Ratio: Size 6 — 800:5
Size 7 — 1200:5
Size 8 — 2000:5

TABLE 8 — AC MAGNETIC STARTERS (LARGE ENCLOSURE)

STANDARD TRIP UNITS — NON-COMPENSATED

For Use With			Motor Full Load Current		Thermal Unit Number		Motor Full Load Current		Thermal Unit Number		Motor Full Load Current		Thermal Unit Number		Motor Full Load Current		Thermal Unit Number				
Class	Type	Size																			
8536 (Starter Used in Multi-Motor Panels) 8538 8539 8547 8549 8606 8630 ± 8640 ▲ 8736 8738 8739 8810 8811 8812 8930 8940 (Sizes 4 & 5 Except Types QF & QG)	Series C (Class 8736 Only)	00 Reversing	0.36	0.39	AR .45	0.69	0.75	AR .86	1.34	1.47	AR 1.68	2.62 — 2.89	AR 3.28	5.12	5.59	AR 6.4					
			0.40	0.42	AR .49	0.76	0.83	AR .95	1.48	1.62	AR 1.85	2.90 — 3.17	AR 3.62	5.60 — 6.15	AR 7.6						
			0.43	0.46	AR .54	0.84	0.91	AR 1.05	1.63	1.78	AR 2.04	3.18 — 3.49	AR 3.98	6.16 — 6.79	AR 7.7						
			0.47	0.51	AR .59	0.92	1.00	AR 1.15	1.79	1.96	AR 2.24	3.50 — 3.83	AR 4.37	6.80 — 7.43	AR 8.6						
			0.52	0.56	AR .65	1.01	1.10	AR 1.26	1.97	2.16	AR 2.46	3.84 — 4.23	AR 4.80	7.44 — 8.14	AR 9.3						
			0.57	0.62	AR .71	1.11	1.21	AR 1.39	2.17	2.37	AR 2.71	4.24 — 4.62	AR 5.3	8.15 — 8.95	AR 10.2						
	Series B	0 1YD 1PW	0.63	0.68	AR .78	1.22	1.33	AR 1.53	2.38	2.61	AR 2.98	4.63 — 5.11	AR 5.8	8.96	9.00	AR 11.2					
			0.33	0.35	AR .45	0.84	0.91	AR 1.15	2.17	2.37	AR 2.98	5.58 — 6.13	AR 7.7	15.9	17.9	AR 23.					
			0.36	0.39	AR .49	0.92	1.00	AR 1.26	2.38	2.62	AR 3.28	6.14 — 6.83	AR 8.5	18.0	19.9	AR 27.					
			0.40	0.42	AR .54	1.01	1.10	AR 1.39	2.63	2.88	AR 3.62	6.84 — 7.41	AR 9.3	Size 0 — 18 Amp. Max. Full Load Cur.							
			0.43	0.46	AR .59	1.11	1.21	AR 1.53	2.89	3.17	AR 3.98	7.42 — 8.05	AR 10.2	20.0	22.4	AR 30.					
			0.47	0.51	AR .65	1.22	1.33	AR 1.68	3.18	3.48	AR 4.37	8.06 — 8.98	AR 11.2	22.5	25.6	AR 35.					
	Series A	2 2YD 2PW	0.52	0.56	AR 71	1.34	1.47	AR 1.85	3.49	3.83	AR 4.80	8.99 — 9.93	AR 12.4	25.7	27.0	AR 40.	Size 1 — 27 Amp. Max. Full Load Cur.				
			0.57	0.62	AR 78	1.48	1.62	AR 2.04	3.84	4.20	AR 5.3	9.94 — 10.9	AR 13.6	38.6 — 45.0	AR 55.						
			0.63	0.68	AR 86	1.63	1.77	AR 2.24	4.21	4.61	AR 5.8	11.0 — 12.4	AR 15.4								
			0.69	0.75	AR .95	1.78	1.96	AR 2.46	4.62	5.07	AR 6.4	12.5 — 14.3	AR 17.6								
			0.76	0.83	AR 1.05	1.97	2.16	AR 2.71	5.08	5.57	AR 7.0	14.4 — 15.8	AR 20.5								
			6.84	7.49	AR 9.3	10.0	11.1	AR 13.6	6.7	19.3	AR 23.	28.4 — 31.2	AR 40.								
Series A	3 3YD 3PW	7.50	8.05	AR 10.2	11.2	12.7	AR 15.4	9.4	21.4	AR 27.	31.3 — 33.3	AR 44.	85.6 — 90.0	AU 123.							
		8.06	9.10	AR 11.2	12.8	14.8	AR 17.6	21.5	25.1	AR 30.	33.4 — 35.5	AR 47.									
		9.11	9.99	AR 12.4	14.9	16.6	AR 20.5	25.7	28.3	AR 35.	35.6 — 38.5	AR 51.									
		14.4	16.1	AU 20.	21.5	26.9	AU 33.	35.1	38.8	AU 50.	55.6 — 61.0	AU 81.									
		16.2	18.6	AU 23.	27.0	28.3	AU 38.	38.9	44.3	AU 56.	61.1 — 68.6	AU 88.									
		Series A	4 4YD 4PW	18.7	20.5	AU 26.	28.4	30.8	AU 40.	44.4	49.3	AU 64.	68.7 — 76.3	AU 99.							
20.6	23.4			AU 29.	30.9	35.0	AU 44.	49.4	55.5	AU 72.	76.4 — 85.5	AU 110.									
43.6	48.7			AU 56.	59.7	66.7	AU 81.	79.7	88.8	AU 110.	106. — 108.	AU 152.									
48.8	53.7			AU 64.	66.8	73.9	AU 88.	88.9	95.6	AU 123.	109. — 118.	AU 169.									
53.8	59.6			AU 72.	74.0	79.6	AU 99.	95.7	105.	AU 135.	119. — 135.	AU 183.									
Series B	5 5YD 5PW			84.8	98.3	AF 123.	113.	130.	AF 150.	141	163.	AF 168.	181. — 203.	AF 205.	217. — 231.	AF 240.					
		98.4	112.	AF 135.	131.	140.	AF 159.	164.	180.	AF 188.	204. — 216.	AF 220.	232. — 270.	AF 260.							
		Consult Your Square D Field Office																			
		H, J, K Series A	6, 7, 8																		

OVERLOAD RELAY THERMAL UNITS SELECTION TABLES



BIMETALLIC THERMAL UNITS

FOR USE WITH 1.15 SERVICE FACTOR MOTORS OPERATING UNDER NORMAL CONDITIONS

TABLE 9 — SEPARATELY MOUNTED OVERLOAD RELAYS

STANDARD TRIP UNITS — NON-COMPENSATED

For Use With														
Class	Type	Size	Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number
9065	ARG, ARO Series A	25 Amp.	0.33 - 0.35	AR .45	0.76 - 0.83	AR 1.05	1.78 - 1.96	AR 2.46	4.21 - 4.62	AR 5.8	9.94 - 10.9	AR 13.6		
			0.36 - 0.39	AR .49	0.84 - 0.91	AR 1.15	1.97 - 2.16	AR 2.71	4.63 - 5.08	AR 6.4	11.0 - 12.4	AR 15.4		
			0.40 - 0.42	AR .54	0.92 - 1.00	AR 1.26	2.17 - 2.37	AR 2.98	5.09 - 5.57	AR 7.0	12.5 - 14.3	AR 17.6		
			0.43 - 0.46	AR .59	1.01 - 1.10	AR 1.39	2.38 - 2.62	AR 3.28	5.58 - 6.13	AR 7.7	14.4 - 15.8	AR 20.5		
			0.47 - 0.51	AR .65	1.11 - 1.21	AR 1.53	2.63 - 2.88	AR 3.62	6.14 - 6.83	AR 8.5	15.9 - 17.9	AR 23.		
			0.52 - 0.56	AR .71	1.22 - 1.33	AR 1.68	2.89 - 3.17	AR 3.98	6.84 - 7.41	AR 9.3	18.0 - 20.0	AR 27.		
	ATG, ATO Series A	50 Amp.	0.57 - 0.62	AR .78	1.34 - 1.47	AR 1.85	3.18 - 3.48	AR 4.37	7.42 - 8.05	AR 10.2	20.1 - 22.4	AR 30.		
			0.63 - 0.68	AR .86	1.48 - 1.62	AR 2.04	3.49 - 3.83	AR 4.80	8.06 - 8.98	AR 11.2	22.5 - 25.0	AR 35.		
			0.69 - 0.75	AR .95	1.63 - 1.77	AR 2.24	3.84 - 4.20	AR 5.3	8.99 - 9.93	AR 12.4				
			0.84 - 7.49	AR 9.3	10.0 - 11.1	AR 13.6	16.7 - 19.3	AR 23.	28.4 - 31.2	AR 40.	38.6 - 42.0	AR 55.		
			7.50 - 8.05	AR 10.2	11.2 - 12.7	AR 15.4	19.4 - 21.4	AR 27.	31.3 - 33.3	AR 44.	42.1 - 45.1	AR 60.		
			8.06 - 9.10	AR 11.2	12.8 - 14.8	AR 17.6	21.5 - 25.1	AR 30.	33.4 - 35.7	AR 47.	45.2 - 50.0	AR 66.		
	AUG, AUO No Series	100 Amp.	9.11 - 9.99	AR 12.4	14.9 - 16.6	AR 20.5	25.2 - 28.3	AR 35.	35.8 - 38.5	AR 51.				
			14.4 - 16.1	AU 20.	23.5 - 26.9	AU 33.	35.1 - 38.8	AU 50.	55.6 - 61.0	AU 81.	85.6 - 100.	AU 123.		
			16.2 - 18.6	AU 23.	27.0 - 28.3	AU 38.	38.9 - 44.3	AU 56.	61.1 - 68.6	AU 88.				
			18.7 - 20.5	AU 26.	28.4 - 30.8	AU 40.	44.4 - 49.3	AU 64.	68.7 - 76.3	AU 99.				
	AFG, AFO Series B	150 Amp.	20.6 - 23.4	AU 29.	30.9 - 35.0	AU 44.	49.4 - 55.5	AU 72.	76.4 - 85.5	AU 110.				
			42.0 - 46.4	AU 50.	57.2 - 63.7	AU 72.	77.4 - 82.2	AU 99.	99.4 - 113.	AU 135.	134 - 150.	AU 183.		
	AGG, AGO Series A	300 Amp.	46.5 - 51.4	AU 56.	63.8 - 69.0	AU 81.	82.3 - 92.8	AU 110.	114 - 123.	AU 152.				
			51.5 - 57.1	AU 64.	69.1 - 77.3	AU 88.	92.9 - 99.3	AU 123.	124 - 133.	AU 169.				
			90.6 - 97.4	AF 110.	112 - 129.	AF 135.	150 - 153.	AF 159.	190 - 213.	AF 188.	241 - 257.	AF 220.		
			97.5 - 111.	AF 123.	130 - 149.	AF 150.	164 - 199.	AF 168.	214 - 240.	AF 205.	258 - 300.	AF 240.		

BIMETALLIC THERMAL UNITS FOR TYPE S STARTERS WITH AMBIENT TEMPERATURE-COMPENSATED RELAYS

SELECTION TABLES FOR USE WITH 1.15 SERVICE FACTOR MOTORS OPERATING UNDER NORMAL CONDITIONS

Ambient temperature-compensated relays are intended for use where the motor is located in a constant ambient temperature, or where the temperatures of the motor ambient and the controller ambient vary independently. Ultimate trip current for each thermal unit is 125% of the minimum motor full load current shown for that unit, with the trip adjustment set at 100%. For intermittent duty motors or high temperature conditions, refer to Square D. Ambient temperature-compensated relays are offered with three thermal units only. For proper operation all three thermal units must be installed and wired so that each thermal unit carries full motor current.

TABLE 10 — AC MAGNETIC STARTERS*

STANDARD TRIP UNITS

For Use With			Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number
Class	Type	Size Series										
All Controller Classes Using Type S Form B Magnetic Starter		0, 1 Series B	0.28 - 0.30	AR .45	0.61 - 0.66	AR 1.15	1.59 - 1.74	AR 2.98	4.66 - 5.29	AR 7.7	13.4 - 15.2	AR 23
			0.31 - 0.33	AR .49	0.67 - 0.73	AR 1.26	1.74 - 1.94	AR 3.28	5.30 - 5.84	AR 8.5	15.3 - 17.2	AR 27
			0.34 - 0.36	AR .54	0.74 - 0.81	AR 1.39	1.95 - 2.20	AR 3.62	5.85 - 6.27	AR 9.3	17.3 - 19.7	AR 30
			0.37 - 0.39	AR .59	0.82 - 0.90	AR 1.53	2.21 - 2.47	AR 3.98	6.28 - 6.97	AR 10.2	Size 0 - 18 Amp. Max. Full Load Cur.	
			0.40 - 0.42	AR .65	0.91 - 1.05	AR 1.68	2.48 - 2.76	AR 4.37	6.98 - 7.59	AR 11.2		
			0.43 - 0.46	AR .71	1.06 - 1.15	AR 1.85	2.77 - 3.07	AR 4.80	7.60 - 7.89	AR 12.4		
		0.47 - 0.50	AR .78	1.16 - 1.25	AR 2.04	3.08 - 3.45	AR 5.3	7.90 - 8.95	AR 13.6	19.8 - 22.4	AR 35	
		0.51 - 0.52	AR .86	1.26 - 1.35	AR 2.24	3.46 - 3.81	AR 5.8	8.96 - 10.3	AR 15.4	22.5 - 26.4	AR 40	
		0.53 - 0.56	AR .95	1.36 - 1.47	AR 2.46	3.82 - 4.20	AR 6.4	10.4 - 11.7	AR 17.6	26.5 - 28.9	AR 44	
		0.57 - 0.60	AR 1.05	1.48 - 1.58	AR 2.71	4.21 - 4.65	AR 7.0	11.8 - 13.3	AR 20.5	29.0 - 30.0	AR 47	
		2 Series A	4.24 - 4.62	AR 8.5	6.45 - 7.48	AR 13.6	12.8 - 14.4	AR 27	23.4 - 24.9	AR 47	33.6 - 36.9	AR 72
			4.63 - 5.05	AR 9.3	7.49 - 8.55	AR 15.4	14.5 - 16.4	AR 30	25.0 - 26.9	AR 51	37.0 - 39.1	AR 79
5.06 - 5.54	AR 10.2		8.56 - 9.74	AR 17.6	16.5 - 18.9	AR 35	27.0 - 29.1	AR 55	39.2 - 40.9	AR 86		
All Controller Classes Using Type S Form JY59 Magnetic Starter		3 Series A	5.55 - 6.13	AR 11.2	9.75 - 11.1	AR 20.5	19.0 - 21.6	AR 40	29.2 - 31.3	AR 60	41.0 - 42.9	AR 93
			6.14 - 6.44	AR 12.4	11.2 - 12.7	AR 23	21.7 - 23.3	AR 44	31.4 - 33.5	AR 66	43.0 - 45.0	AR 102
			Consult Factory									

*Table does not apply for Form Y59 vertical action starters.



SELECTION
TABLES

OVERLOAD RELAY THERMAL UNITS

BIMETALLIC THERMAL UNITS FOR TYPE S STARTERS
WITH NON-COMPENSATED RELAYS

SELECTION TABLES FOR USE WITH 1.15 SERVICE FACTOR MOTORS OPERATING UNDER NORMAL CONDITIONS

Tables apply for continuous duty motors only. For intermittent duty motors, refer to Square D. For unusual temperature conditions, refer to instructions on Page 217. Table selections will trip at 125% of motor full load current, or less, under sustained operation in an ambient temperature of 40° C (104° F), with the trip adjustment set at 100%.

TABLE 11 — AC MAGNETIC STARTERS (SMALL ENCLOSURE)

STANDARD TRIP UNITS

For Use With				Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number
Class	Type & Series	Size	Form												
8536 (Starter in Own Enclosure)	SB & SC Series A	0 & 1	B1 (Two Thermal Units)	0.37 - 0.39	AR .45	0.87 - 0.94	AR 1.15	2.26 - 2.41	AR 2.98	6.25 - 7.15	AR 7.7	Size 0 18 Amp. Max. Full Load Cur.			
				0.40 - 0.42	AR .49	0.95 - 1.04	AR 1.26	2.48 - 2.73	AR 3.28	7.16 - 7.84	AR 8.5				
				0.43 - 0.46	AR .54	1.05 - 1.14	AR 1.39	2.74 - 2.99	AR 3.62	7.85 - 8.56	AR 9.3				
				0.47 - 0.50	AR .59	1.15 - 1.25	AR 1.53	3.00 - 3.31	AR 3.98	8.57 - 9.40	AR 10.2	18.2 - 20.8 AR 23			
				0.51 - 0.54	AR .65	1.26 - 1.42	AR 1.68	3.32 - 3.71	AR 4.37	9.41 - 10.2	AR 11.2				
				0.55 - 0.59	AR .71	1.43 - 1.62	AR 1.85	3.72 - 4.15	AR 4.80	10.3 - 10.7	AR 12.4	20.9 - 23.6 AR 27			
				0.60 - 0.65	AR .78	1.63 - 1.75	AR 2.04	4.16 - 4.65	AR 5.3	10.8 - 12.2	AR 13.6	23.7 - 26.7 AR 30			
				0.66 - 0.71	AR .86	1.76 - 1.91	AR 2.24	4.66 - 5.11	AR 5.8	12.3 - 14.1	AR 15.4	26.8 - 27.0 AR 35			
				0.72 - 0.78	AR .95	1.92 - 2.07	AR 2.46	5.12 - 5.68	AR 6.4	14.2 - 15.9	AR 17.6				
				0.79 - 0.86	AR 1.05	2.08 - 2.25	AR 2.71	5.69 - 6.24	AR 7.0	16.0 - 18.1	AR 20.5				
			B2 (Three Thermal Units)	0.30 - 0.31	AR .45	0.69 - 0.75	AR 1.15	1.80 - 2.02	AR 2.98	5.20 - 5.93	AR 7.7	14.0 - 15.9 AR 23			
				0.32 - 0.34	AR .49	0.76 - 0.82	AR 1.26	2.03 - 2.19	AR 3.28	5.94 - 6.45	AR 8.5				
				0.35 - 0.37	AR .54	0.83 - 0.91	AR 1.39	2.20 - 2.43	AR 3.62	6.46 - 7.08	AR 9.3	16.0 - 17.7 AR 27			
				0.38 - 0.41	AR .59	0.92 - 1.00	AR 1.53	2.44 - 2.81	AR 3.98	7.09 - 7.71	AR 10.2	17.8 - 20.3 AR 30			
				0.42 - 0.45	AR .65	1.01 - 1.18	AR 1.68	2.82 - 3.12	AR 4.37	7.72 - 8.39	AR 11.2	Size 0 18 Amp. Max. Full Load Cur.			
				0.46 - 0.49	AR .71	1.19 - 1.30	AR 1.85	3.13 - 3.47	AR 4.80	8.40 - 8.64	AR 12.4				
8998 8999 (Model 3 and Model 4 Control Centers)	SD Series A	2	B1 (Two Thermal Units)	0.50 - 0.54	AR .78	1.31 - 1.41	AR 2.04	3.48 - 3.89	AR 5.3	8.65 - 9.74	AR 13.6	20.4 - 22.8 AR 35			
				0.55 - 0.56	AR .86	1.42 - 1.53	AR 2.24	3.90 - 4.30	AR 5.8	9.75 - 11.0	AR 15.4				
				0.57 - 0.62	AR .95	1.54 - 1.69	AR 2.46	4.31 - 4.69	AR 6.4	11.1 - 12.4	AR 17.6	22.9 - 26.1 AR 40			
				0.63 - 0.68	AR 1.05	1.70 - 1.79	AR 2.71	4.70 - 5.19	AR 7.0	12.5 - 13.9	AR 20.5	26.2 - 27.0 AR 44			
				4.83 - 5.33	AR 8.5	7.31 - 8.29	AR 13.6	14.1 - 16.0	AR 27	24.8 - 26.2	AR 47	34.6 - 37.6 AR 72			
				5.34 - 5.84	AR 9.3	8.30 - 9.49	AR 15.4	16.1 - 18.4	AR 30	26.3 - 28.3	AR 51				
QMB Panel	SE Series A	3	B1 (Two Thermal Units)	5.85 - 6.43	AR 10.2	9.50 - 10.7	AR 17.6	18.5 - 21.0	AR 35	28.4 - 30.3	AR 55	37.7 - 39.7 AR 79			
				6.44 - 7.03	AR 11.2	10.8 - 12.3	AR 20.5	21.1 - 23.0	AR 40	30.4 - 32.5	AR 60	39.8 - 41.4 AR 86			
				7.04 - 7.30	AR 12.4	12.4 - 14.0	AR 23	23.1 - 24.7	AR 44	32.6 - 34.5	AR 66	41.5 - 43.2 AR 93			
				4.90 - 5.68	AR 8.5	7.50 - 8.48	AR 13.6	14.0 - 15.7	AR 27	24.6 - 25.8	AR 47	43.3 - 45.0 AR 102			
				5.69 - 6.19	AR 9.3	8.49 - 9.66	AR 15.4	15.8 - 18.1	AR 30	25.8 - 27.4	AR 51	33.4 - 35.7 AR 72			
				6.20 - 6.71	AR 10.2	9.67 - 10.8	AR 17.6	18.2 - 20.3	AR 35	27.5 - 29.3	AR 55	35.8 - 38.1 AR 79			
			B2 (Three Thermal Units)	6.72 - 7.14	AR 11.2	10.9 - 12.4	AR 20.5	20.4 - 23.0	AR 40	29.4 - 31.4	AR 60	38.2 - 40.7 AR 86			
				7.15 - 7.49	AR 12.4	12.5 - 13.9	AR 23	23.1 - 24.5	AR 44	31.5 - 33.3	AR 66	40.8 - 44.1 AR 93			
				15.1 - 17.0	AU 20	24.6 - 27.9	AU 33	36.7 - 40.3	AU 50	57.4 - 62.4	AU 81	44.2 - 45.0 AR 102			
				17.1 - 19.1	AU 23	28.0 - 29.5	AU 38	40.4 - 45.1	AU 56	62.5 - 68.3	AU 88	80.7 - 90.0 AU 123			
				19.2 - 21.8	AU 26	29.6 - 32.9	AU 40	45.2 - 50.4	AU 64	68.4 - 73.9	AU 99				
				21.9 - 24.5	AU 29	33.0 - 36.6	AU 44	50.5 - 57.3	AU 72	74.0 - 80.6	AU 110				

TABLE 12 — AC MAGNETIC STARTERS (LARGE ENCLOSURE)

STANDARD TRIP UNITS

For Use With				Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number
Class	Type & Series	Size	Form												
8536 (Starter Used in Multi-Motor Panels)	SB & SC Series A	0 & 1	B1 (Two Thermal Units)	0.38 - 0.40	AR .45	0.82 - 0.89	AR 1.05	2.01 - 2.17	AR 2.46	4.89 - 5.37	AR 5.8	11.3 - 12.3 AR 13.6			
				0.41 - 0.43	AR .49	0.90 - 0.97	AR 1.15	2.18 - 2.35	AR 2.71	5.38 - 5.97	AR 6.4				
				0.44 - 0.48	AR .54	0.98 - 1.07	AR 1.26	2.36 - 2.60	AR 2.98	5.98 - 6.55	AR 7.0	12.9 - 14.8 AR 15.4			
				0.49 - 0.52	AR .59	1.08 - 1.17	AR 1.39	2.61 - 2.87	AR 3.28	6.56 - 7.50	AR 7.7	14.9 - 16.7 AR 17.6			
				0.53 - 0.56	AR .65	1.18 - 1.31	AR 1.53	2.88 - 3.14	AR 3.62	7.51 - 8.23	AR 8.5	16.8 - 19.0 AR 20.5			
				0.57 - 0.61	AR .71	1.32 - 1.49	AR 1.68	3.15 - 3.47	AR 3.98	8.24 - 8.99	AR 9.3	Size 0 18 Amp. Max. Full Load Cur.			
			B2 (Three Thermal Units)	0.62 - 0.67	AR .78	1.50 - 1.69	AR 1.85	3.48 - 3.90	AR 4.37	9.00 - 9.86	AR 10.2	19.1 - 22.0 AR 23			
				0.68 - 0.73	AR .86	1.70 - 1.83	AR 2.04	3.91 - 4.36	AR 4.80	9.87 - 10.7	AR 11.2				
				0.74 - 0.81	AR .95	1.84 - 2.00	AR 2.24	4.37 - 4.88	AR 5.3	10.8 - 11.2	AR 12.4	22.1 - 24.9 AR 27			
				0.31 - 0.33	AR .45	0.71 - 0.77	AR 1.15	1.86 - 2.08	AR 2.98	5.38 - 6.12	AR 7.7	14.7 - 16.5 AR 23			
				0.34 - 0.36	AR .49	0.78 - 0.85	AR 1.26	2.09 - 2.27	AR 3.28	6.13 - 6.65	AR 8.5	16.6 - 18.5 AR 27			
				0.37 - 0.39	AR .54	0.86 - 0.94	AR 1.39	2.28 - 2.51	AR 3.62	6.66 - 7.31	AR 9.3	Size 0 18 Amp. Max. Full Load Cur.			
8940 All Types Except CA, DA, EA, FA, GA, QC, QD, QE, QF and QG	SD Series A	2	B1 (Two Thermal Units)	0.40 - 0.43	AR .59	0.95 - 1.03	AR 1.53	2.52 - 2.90	AR 3.98	7.32 - 7.96	AR 10.2	18.6 - 21.0 AR 30			
				0.44 - 0.47	AR .65	1.04 - 1.22	AR 1.68	2.91 - 3.23	AR 4.37	7.97 - 8.69	AR 11.2				
				0.48 - 0.51	AR .71	1.23 - 1.34	AR 1.85	3.24 - 3.58	AR 4.80	8.70 - 8.99	AR 12.4	21.1 - 23.5 AR 35			
				0.52 - 0.56	AR .78	1.35 - 1.46	AR 2.04	3.59 - 4.02	AR 5.3	9.00 - 10.1	AR 13.6	23.7 - 27.0 AR 40			
				0.57 - 0.58	AR .86	1.47 - 1.58	AR 2.24	4.03 - 4.43	AR 5.8	10.2 - 11.5	AR 15.4				
				0.59 - 0.64	AR .95	1.59 - 1.76	AR 2.46	4.44 - 4.86	AR 6.4	11.6 - 13.0	AR 17.6				
			B2 (Three Thermal Units)	0.65 - 0.70	AR 1.05	1.77 - 1.85	AR 2.71	4.87 - 5.37	AR 7.0	13.1 - 14.6	AR 20.5				

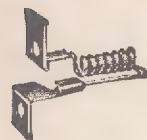
† Divide the delta connected motor full load current by 1.73 using this quotient, select thermal units from table.

▲ Use full load current of each winding as basis for selection — normally one-half of total motor current.

(Table 12 is continued on next page.)



OVERLOAD RELAY THERMAL UNITS SELECTION TABLES



BIMETALLIC THERMAL UNITS FOR TYPE S STARTERS WITH NON-COMPENSATED RELAYS

SELECTION TABLES FOR USE WITH 1.15 SERVICE FACTOR MOTORS OPERATING UNDER NORMAL CONDITIONS

Tables apply for continuous duty motors only. For intermittent duty motors, refer to Square D. For unusual temperature conditions, refer to instructions on Page 217. Table selections will trip at 125% of motor full load current, or less, under sustained operation in an ambient temperature of 40° C (104° F) with the trip adjustment set at 100%.

TABLE 12 (Continued) — AC MAGNETIC STARTERS (LARGE ENCLOSURE)

STANDARD TRIP UNITS

For Use With				Motor Full Load Current		Thermal Unit Number	Motor Full Load Current		Thermal Unit Number	Motor Full Load Current		Thermal Unit Number	Motor Full Load Current		Thermal Unit Number	Motor Full Load Current		Thermal Unit Number
Class	Type & Series	Size	Form															
8536 (Starter Used in Multi-Motor Panels)	SD Series A	2	B1 (Two Thermal Units)	5.00	5.59	AR 8.5	7.68	8.68	AR 13.6	14.8	16.9	AR 27	26.4	28.0	AR 47	36.7	39.5	AR 72
				5.60	6.11	AR 9.3	8.69	9.94	AR 15.4	17.0	19.2	AR 30	28.1	30.3	AR 51	39.6	41.9	AR 79
				6.12	6.72	AR 10.2	9.95	11.1	AR 17.6	19.3	21.9	AR 35	30.4	32.2	AR 55	42.0	44.0	AR 85
				6.73	7.37	AR 11.2	11.2	12.9	AR 20.5	22.0	24.4	AR 40	32.3	34.4	AR 60	44.1	45.0	AR 93
				7.38	7.67	AR 12.4	13.0	14.7	AR 23	24.5	26.3	AR 44	34.5	36.6	AR 66			
				5.15	5.97	AR 8.5	7.94	9.04	AR 13.6	15.0	16.9	AR 27	26.8	28.1	AR 47	36.0	38.6	AR 72
				5.98	6.50	AR 9.3	9.05	10.2	AR 15.4	17.0	19.3	AR 30	28.2	29.7	AR 51	38.7	41.1	AR 79
				6.51	7.04	AR 10.2	10.3	11.5	AR 17.6	19.4	21.7	AR 35	29.8	31.8	AR 55	41.7	43.8	AR 86
				7.05	7.59	AR 11.2	11.6	13.2	AR 20.5	21.8	25.0	AR 40	31.9	33.9	AR 60	43.9	45.0	AR 93
				7.60	7.93	AR 12.4	13.3	14.9	AR 23	25.1	26.7	AR 44	34.0	35.9	AR 66			
8540 All Types except CA, DA, EA, FA, GA, QC, QD, QE, QF and QG	SE Series A	3	B3 & B4 (Three Thermal Units)	15.7	17.7	AU 20	25.8	29.1	AU 33	38.4	42.3	AU 50	60.6	64.9	AU 81	85.4	90.0	AU 123
				17.8	19.9	AU 23	29.2	30.8	AU 38	42.4	47.5	AU 56	65.0	71.5	AU 88			
				20.0	22.7	AU 26	30.9	34.3	AU 40	47.6	53.0	AU 64	71.6	77.3	AU 99			
				22.8	25.7	AU 29	34.4	38.3	AU 44	53.1	60.5	AU 72	77.4	85.3	AU 110			

† Divide the delta connected motor full load current by 1.73; using this quotient, select thermal units from table.

▲ Use full load current of each winding as basis for selection — normally one-half of total motor current.



Melting Alloy Type Thermal Unit

APPROXIMATE THERMAL UNIT SELECTIONS MELTING ALLOY TYPE

FOR USE ONLY WHEN MOTOR FULL LOAD CURRENT IS NOT KNOWN

Thermal units selected from these tables will provide an ultimate trip current between 101% and 125% of full load current for many single speed, normal torque, 60 cycle motors. Since full load current ratings of different makes and types of motors vary so widely, however, these selections may not always be suitable.

Whenever possible, thermal units should be selected from standard tables on the basis of nameplate full load current and service factor. Thermal unit sizes originally selected on an approximate basis should always be rechecked, and corrected if necessary, at time of installation.

INSTRUCTIONS

- 1—Locate motor horsepower in appropriate table.
- 2—Read straight across to find thermal unit selection for motor voltage involved.
- 3—Selection applies only for starter size appearing between the same heavy horizontal lines.

AC MANUAL STARTERS — CLASS 2510, 2511

Type	HP	Three Phase Motor				Single Phase Motor				Type	HP	Three Phase Motor				Single Phase Motor			
		Voltage★			Str. Size	Voltage		Str. Size	Voltage★			Str. Size	Voltage		Str. Size				
		220 V.	440 V.	550 V.		115 V.	230 V.		220 V.				440 V.	550 V.		115 V.	230 V.		
B & C	1/20	B 0.39			M-0 or M-1	B 2.40	B 1.16	M-0 or M-1	MB MC TB TC	1/20	B 0.39			M-0 or M-1	B 2.40	B 1.16	M-0 or M-1		
	1/12	B 0.57				B 3.00	B 1.57			B 1/12	B 0.67				B 3.30	B 1.67			
	1/8	B 0.71				B 3.70	B 1.88			B 1/8	B 0.81				B 3.70	B 2.10			
	1/6	B 0.92				B 4.15	B 2.40	1/6		B 1.03	B 0.51			B 4.85	B 2.40				
	1/4	B 1.30	B 0.63	B 0.51		B 5.50	B 3.00	1/4		B 1.30	B 0.63	B 0.57		B 6.25	B 3.00				
	1/3	B 1.67	B 0.71	B 0.63		B 6.90	B 3.30	1/3		B 1.67	B 0.81	B 0.63		B 6.90	B 3.30				
	1/2	B 2.40	B 1.16	B 0.92		B 9.10	B 4.15	1/2		B 2.40	B 1.16	B 0.92		B 9.10	B 4.15				
	3/4	B 3.30	B 1.67	B 1.30		B 11.5	B 5.50	3/4		B 3.30	B 1.67	B 1.30		B 11.5	B 5.50				
	1	B 4.15	B 2.10	B 1.67		B 15.5	B 6.90	1		B 4.15	B 2.10	B 1.88		B 15.5	B 7.70				
	1-1/2	B 5.50	B 3.00	B 2.40		B 19.5	B 10.2	1-1/2		B 6.25	B 3.00	B 2.40		B 22.0	B 10.2				
2	B 7.70	B 3.70	B 3.00	B 28.0	B 14.	2	B 8.20	B 3.70	B 3.30		B 28.0	B 14.0							
3	B 11.5	B 5.50	B 4.15	B 40.	B 19.5	M-1	3	B 12.8	B 6.25	B 4.85		B 40.	B 22.	M-1					
5	B 17.5	B 9.10	B 6.90	*	B 28.0	M-1P	5	B 22.	B 9.10	B 7.70		*	B 32.						
7-1/2	B 28.0	B 14.	B 10.2		*	*	7-1/2	B 32.	B 14.	B 11.5		*	B 45.						
10	*	B 17.5	B 14.	M-1	*	*	10	B 40.▲	B 19.5	B 15.5	M-1	*	*	M-1P					

* Starter size indicated is not suitable for this combination of horsepower and voltage.

★ For 208 volt applications use 220 V. column.

▲ Starter size M-1P



SELECTION TABLES OVERLOAD RELAY THERMAL UNITS

APPROXIMATE THERMAL UNIT SELECTIONS MELTING ALLOY TYPE

FOR USE ONLY WHEN MOTOR FULL LOAD CURRENT IS NOT KNOWN



AC MANUAL STARTERS TYPE F FRACTIONAL HP

Starter Class	HP	Single Phase Motor	
		Voltage	
		115 V.	230 V.
2510	1/20	A 1.99	A 1.02
	1/12	A 2.57	A 1.39
	1/8	A 3.95	A 1.63
	1/6	A 4.79	A 1.99
	1/4	A 5.78	A 2.31
	1/3	A 6.99	A 2.81
	1/2	A 9.25	A 4.32
	3/4	A 11.9	A 5.78
	1	A 16.2	A 7.65

AC MAGNETIC STARTERS — TYPE A

Starter Class	HP	Three Phase Motor				Str. Size	Single Phase Motor		
		Voltage★			Voltage		Str. Size		
		220 V.	440 V.	550 V.	115 V.			230 V.	
8536 (Starter in Own Enclo- sure)	1/20	A 31			00	A 1.99	A .95	00	
	1/12	A .49				A 2.57	A 1.25		
	1/8	A .65				A 3.61	A 1.63		
	1/6	A .78				A 4.32	A 1.99		
	1/4	A 1.02	A .54	A .39		A 5.30	A 2.31		
	1/3	A 1.25	A .65	A .54		A 6.20	A 2.81		
	1/2	A 1.86	A .95	A .78		*	A 4.32		
	3/4	A 2.57	A 1.25	A 1.02		*	A 5.30		
	1	A 3.95	A 1.75	A 1.39		*	A 7.65		
	1-1/2	A 5.30	A 2.31	A 1.86		*	*		
2	*	A 3.61	A 2.31	*	*				

AC MAGNETIC STARTERS — TYPES B, C, D, E, F, G

Starter Class	HP	Three Phase Motor				Str. Size	Single Phase Motor			Starter Class	HP	Three Phase Motor				Str. Size
		Voltage★			Str. Size		Voltage		Str. Size			Voltage★			Str. Size	
		220 V.	440 V.	550 V.			115 V.	230 V.				220 V.	440 V.	550 V.		
8536 (Starter In Own Enclo- sure)	1/20	B 0.39			0 or 1	B 2.40	B 1.16	0 or 1	8536 (Starter Used in Multi- Motor Panel)	1/20	B 0.39			0 or 1		
	1/12	B 0.63				B 3.30	B 1.67			1/12	B 0.57					
	1/8	B 0.81				B 3.70	B 2.10			1/8	B 0.81					
	1/6	B 1.03				B 4.85	B 2.40			1/6	B 0.92					
	1/4	B 1.30	B 0.63	B 0.57		B 6.25	B 3.00			1/4	B 1.30	B 0.63	B 0.57			
	1/3	B 1.67	B 0.81	B 0.63		B 7.70	B 3.30			1/3	B 1.67	B 0.81	B 0.63			
	1/2	B 2.40	B 1.16	B 1.03		B 9.10	B 4.15			1/2	B 2.10	B 1.16	B 0.92			
	3/4	B 3.30	B 1.67	B 1.30		B 12.8	B 6.25			3/4	B 3.00	B 1.67	B 1.30			
	1	B 4.15	B 2.10	B 1.88		B 17.5	B 7.70			1	B 4.15	B 2.10	B 1.67			
	1-1/2	B 6.25	B 3.00	B 2.40		B 25.	B 10.2			1P	8538 8539 8547 8549 8606 8650 8651 8736 8738 8739 8930	1-1/2	B 6.25		B 3.00	B 2.10	1
2	B 7.70	B 3.70	B 3.00	B 36.	B 15.5	2	B 7.70	B 3.70	B 3.00							
3	B 12.8	B 6.25	B 4.85	B 56.	B 25.	3	B 12.8	B 5.50	B 4.15							
5	B 22.	B 9.10	B 7.70	C 58.	B 40.	5	B 22.	B 9.10	B 7.70							
7-1/2	B 36.	B 15.5	B 11.5	C 75.	B 40.	7-1/2	B 32.	B 14.	B 10.2							
10	B 32.	B 22.	B 15.5	*	C 51.	10	B 32.	B 19.5	B 15.5							
15	B 50.	B 25.	B 19.5	*	C 75.	15	B 50.	B 25.	B 19.5							
20	C 66.	B 32.	B 28.0	2			20	C 66.	B 32.			B 28.0	2			
25	C 83.	B 40.	B 32.				25	C 83.	B 40.			B 32.				
30	C 103.	C 51.	C 40.				30	C 103.	C 51.			C 40.				
40	CC 143.	C 66.	C 51.				40	CC 143.	C 66.	C 51.						
50	CC 180.	C 83.	C 66.				50	CC 167.	C 83.	C 66.						
60	DD 185.	CC 103.	CC 81.5		4			60	DD 160.	CC 94.0	CC 74.6	4				
75	DD 220.	CC 132.	CC 103.					75	DD 220.	CC 121.	CC 94.0					
100	DD 320.	CC 180.	CC 143.					100	DD 300.	CC 167.	CC 132.					
125	*	DD 185.	DD 150.			5			125	*	DD 185.			DD 140.	5	
150	*	DD 220.	DD 185.						150	*	DD 220.			DD 160.		
200	*	DD 300.	DD 250.					200	*	DD 280.	DD 220.					

*Starter size indicated is not suitable for this combination of horsepower and voltage.

★For 208 volt applications use 220 V. column.

SEE PAGE 226 FOR INSTRUCTIONS



OVERLOAD RELAY THERMAL UNITS SELECTION TABLES

TYPE S AC MAGNETIC STARTERS

Starter Class	HP	Three Phase Motor				Single Phase Motor				Starter Class	HP	Three Phase Motor			
		Voltage★			Str. Size	Voltage		Str. Size	Voltage★			Str. Size			
		220 V.	440 V.	550 V.		115 V	230 V.		220 V.				440 V.	550 V.	
8536 (Starter in Own Enclosure)	1/20	B 0.39				B 2.65	B 1.30			8536 (Starter Used in Multi-Motor Panel)	1/20	B 0.39			
	1/12	B 0.63				B 3.30	B 1.67				1/12	B 0.63			
	1/8	B 0.81				B 4.15	B 2.10				1/8	B 0.81			
	1/6	B 1.03				B 4.85	B 2.65				1/6	B 1.03			
	1/4	B .45	B 0.71	B 0.63		B 6.25	B 3.30	0 or 1			1/4	B 1.30	B 0.71	B 0.57	
	1/3	B .67	B 0.81	B 0.71		B 7.70	B 3.70				1/3	B 1.67	B 0.81	B 0.63	0 or 1
	1/2	B 2.65	B 1.30	B 1.03	0 or 1	B 10.2	B 4.85				1/2	B 2.40	B 1.30	B 0.92	
	3/4	B 3.30	B 1.67	B 1.45		B 12.8	B 6.25				3/4	B 3.30	B 1.67	B 1.30	
	1	B 4.15	B 2.40	B 1.89		B 17.5	B 8.20				1	B 4.15	B 2.10	B 1.67	
	1-1/2	B 6.25	B 3.30	B 2.65		B 25.	B 11.5				1-1/2	B 6.25	B 3.00	B 2.40	
8998 8999 (Model 3 and Model 4 Control Center)	2	B 8.20	B 4.15	B 3.30		B 32.	B 15.5			2	B 8.20	B 3.70	B 3.00		
	3	B 12.8	B 6.25	B 4.85		B 36.	B 22.	1		3	B 12.8	B 5.50	B 4.85		
	5	B 22.	B 10.2	B 8.20		CC 64.3	B 28.0	1P		5	B 19.5	B 9.10	B 7.70		
	7-1/2	B 32.	B 15.5	B 12.8	1	CC 87.7	B 45.	2		7-1/2	B 32.	B 14.	B 11.5	1	
	10	B 36.	B 19.5	B 15.5		*	CC 59.4			10	B 36.	B 19.5	B 15.5		
	15	B 56.	B 28.0	B 22.		*	CC 87.7	3		15	B 56.	B 28.0	B 22.		
	20	CC 81.5	B 36.	B 28.0	2					20	CC 74.6	B 36.	B 28.0	2	
	25	CC 103.	B 45.	B 36.						25	CC 94.0	B 45.	B 36.		
	30	CC 143.	CC 54.5	CC 42.7						30	CC 121	CC 54.5	CC 39.6	3	
	40	*	CC 81.5	CC 59.4	3					40	*	CC 74.6	CC 54.5		
50	*	CC 94.0	CC 74.6						50	*	CC 87.7	CC 68.5			

*Starter size indicated is not suitable for indication of horsepower and voltage.

★For 208 volt applications use 220 V. column.

SEE PAGE 226 FOR INSTRUCTIONS

BRANCH CIRCUIT PROTECTION

Overload relays are intended for protection of motors from prolonged overload currents up to and including locked rotor current. Protection of the motor, the controller, and the conductors from higher currents due to short circuits or grounds is a function of the branch circuit fuses or circuit breaker. Provide proper branch circuit protection for each motor as specified in the National Electrical Code and in the instructions furnished with the controller. Always be certain that overload relay thermal units of the proper type and size have been installed before operating the motor.

OVERLOAD RELAYS FOR GROUP FUSING

Section 430-53 of the National Electrical Code allows, with certain limitations, the use of more than one motor on a branch circuit protected by a single set of fuses. Class 2510 Type R and S enclosed

manual starters are suitable for group fusing if all motors are 2 hp or less. Class 2510 Type C manual starters in NEMA 12 or NEMA 4 stainless steel enclosure may also be group fused if all motors are 2 hp or less. Branch circuit fuses must not be larger than shown in the table below for the thermal units protecting the smallest motor of the group.

Starter	Thermal Unit	Max. Fuse (Size Amp.)†	
		250 V.	600 V.
Class 2510 Types RG-1 thru RG-6, SG-1 thru SG-6	GF 0.44 thru GF 3.74	60	30
	GF 4.19 thru GF 8.20	100	30
	GF 9.30 thru GF 22.5	100	
Class 2510 Types CA-1 thru CA-4, CW-1 thru CW-14	B 0.44 thru B 4.15	30	30
	B 4.85 thru B 15.5	100	100
	B 17.5 thru B 28.0	150	150

†Single element fuses only. (Time lag fuses not suitable)



SELECTION
TABLES

OVERLOAD RELAY THERMAL UNITS

MELTING ALLOY THERMAL UNITS FOR

MODEL 4

MOTOR CONTROL CENTERS



FOR USE WITH 1.15 SERVICE FACTOR MOTORS OPERATING UNDER NORMAL CONDITIONS

Tables apply for continuous duty motors only. For intermittent duty motors, refer to Square D. For unusual temperature conditions, refer to instructions on page 217. Table selections will trip at 125% of motor full load current, or less, under sustained operation in an ambient temperature of 40° C (104° F).

STANDARD TRIP UNITS

MODEL 4

Starter													
NEMA Size	Type	Series*	Overload Relays†	Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number	Motor Full Load Current	Thermal Unit Number
1 and 1 PW▲	SC	A	2 or 3	0.31 - 0.32	B 0.44	1.06 - 1.25	B 1.67	4.14 - 4.43	B 6.25	11.4 - 13.1	B 19.5		
				0.33 - 0.36	B 0.51	1.26 - 1.33	B 1.88	4.44 - 4.96	B 6.90	13.2 - 14.9	B 22		
				0.37 - 0.41	B 0.57	1.34 - 1.56	B 2.10	4.97 - 5.35	B 7.70	15.0 - 16.1	B 25		
				0.42 - 0.49	B 0.63	1.57 - 1.71	B 2.40	5.36 - 5.91	B 8.20	16.2 - 17.8	B 28		
2 and 2 PW▲	SD	A	2 or 3	0.50 - 0.54	B 0.71	1.72 - 1.97	B 2.65	5.92 - 6.79	B 9.10	17.9 - 19.1	B 32		
				0.55 - 0.61	B 0.81	1.98 - 2.15	B 3.00	6.80 - 7.56	B 10.2	19.2 - 22.4	B 36		
				0.62 - 0.67	B 0.92	2.16 - 2.42	B 3.30	7.57 - 7.83	B 11.5	22.5 - 23.5	B 40		
				0.68 - 0.76	B 1.03	2.43 - 2.78	B 3.70	7.84 - 8.09	B 12.8	23.6 - 25.7	B 45		
3 and 3 PW▲	SE‡	A	2 or 3	0.77 - 0.87	B 1.16	2.79 - 3.28	B 4.15	8.10 - 9.51	B 14	25.8 - 27.0	B 50		
				0.88 - 0.98	B 1.30	3.29 - 3.88	B 4.85	9.52 - 10.1	B 15.5				
				0.99 - 1.05	B 1.45	3.89 - 4.13	B 5.50	10.2 - 11.3	B 17.5				
				3.79 - 4.14	B 5.50	7.69 - 7.92	B 11.5	15.2 - 16.7	B 25	29.7 - 32.1	B 56		
4 and 4 PW▲	F	C	2 or 3	4.15 - 4.44	B 6.25	7.93 - 8.47	B 12.8	16.8 - 17.9	B 28	32.2 - 32.9	B 62		
				4.45 - 5.22	B 6.90	8.48 - 9.99	B 14	18.0 - 20.1	B 32	33.0 - 34.4	B 66		
				5.23 - 5.29	B 7.70	10.0 - 10.8	B 15.5	20.2 - 23.8	B 36	34.5 - 38.3	B 70		
				5.30 - 5.99	B 8.20	10.9 - 12.3	B 17.5	23.9 - 25.8	B 40	38.4 - 39.9	B 79		
5 and 5 PW▲	G	B	2 or 3	6.00 - 6.82	B 9.10	12.4 - 12.9	B 19.5	25.9 - 28.3	B 45	40.0 - 45.0	B 88		
				6.83 - 7.68	B 10.2	13.0 - 15.1	B 22	28.4 - 29.6	B 50				
				14.4 - 15.3	CC 20.9	26.0 - 27.8	CC 39.6	45.4 - 47.9	CC 74.6	73.0 - 74.9	CC 143		
				15.4 - 16.4	CC 22.8	27.9 - 29.8	CC 42.7	48.0 - 51.9	CC 81.5	75.0 - 77.9	CC 156		
6 and 6 PW▲	H	A	2 or 3	16.5 - 18.4	CC 24.6	29.9 - 31.7	CC 46.6	52.0 - 56.5	CC 87.7	78.0 - 80.9	CC 167		
				18.5 - 19.6	CC 26.3	31.8 - 34.2	CC 50.1	56.6 - 60.7	CC 94.0	81.0 - 82.9	CC 180		
				19.7 - 21.0	CC 28.8	34.3 - 36.9	CC 54.5	60.8 - 64.8	CC 103	83.0 - 90.0	CC 196		
				21.1 - 22.7	CC 31.0	37.0 - 39.8	CC 59.4	64.9 - 67.1	CC 112				
7★	J	A	2 or 3	22.8 - 24.2	CC 33.3	39.9 - 42.3	CC 64.3	67.2 - 70.1	CC 121				
				24.3 - 25.9	CC 36.4	42.4 - 45.3	CC 68.5	70.2 - 72.9	CC 132				
				43.8 - 46.3	CC 64.3	58.5 - 62.6	CC 87.7	79.0 - 84.2	CC 121	108. - 115.	CC 167		
				46.4 - 50.0	CC 68.5	62.7 - 68.4	CC 94.0	84.3 - 91.9	CC 132	116. - 135.	CC 180		
8 and 8 PW▲	K	C	2 or 3	50.1 - 54.6	CC 74.6	68.5 - 73.3	CC 103	92.0 - 99.3	CC 143				
				54.7 - 58.4	CC 81.5	73.4 - 78.9	CC 112	99.4 - 107.	CC 156				
				84.0 - 91.4	DD 112	107. - 114.	DD 140	138. - 155.	DD 185	190. - 214.	DD 265		
				91.5 - 99.4	DD 121	115. - 123.	DD 150	156. - 176.	DD 220	215. - 229.	DD 300		
9 and 9 PW▲	L	B	2 or 3	99.5 - 106.	DD 128	124. - 137.	DD 160	177. - 189.	DD 250	230. - 270.	DD 320		
				173. - 190.	B 1.30	247. - 274.	B 1.88	347. - 380.	B 2.65	478. - 540.	B 3.70		
				191. - 217.	B 1.45	275. - 313.	B 2.10	381. - 424.	B 3.00				
				218. - 246.	B 1.67	314. - 346.	B 2.40	425. - 477.	B 3.30				
10★	M	A	2 or 3	286. - 325.	B 1.45	413. - 469.	B 2.10	572. - 637.	B 3.00	800. - 810.	B 4.15		
				326. - 368.	B 1.67	470. - 519.	B 2.40	638. - 716.	B 3.30				
				369. - 412.	B 1.88	520. - 571.	B 2.65	717. - 799.	B 3.70				

*Series designations listed refer to the marking on the nameplate of the basic open type starter. When the starter is supplied in a controller containing other devices, the controller may have a different Series designation marked on the enclosure nameplate.

†Number represents quantity of overload relays furnished per three phase starter except on two speed and part winding starters where double this quantity is furnished.

▲Overload relays on part winding starters experience ½ the total line current

because they are exposed to motor winding currents rather than total line current. Therefore, in selecting overload relay thermal units use ½ the total motor full load current.

‡Refer to local Square D Field Office for OL relay thermal unit selections for earlier design Size 3, Type E, Series A, starter.

★Sizes 6 and 6 PW units operate from the secondaries of 800/5 ratio current transformers (Size 7 uses 1200/5 ratio).



ADJUSTABLE MAGNETIC TRIP ONLY CIRCUIT BREAKERS

SELECTION TABLES

For Motor Branch Circuits — Adapted From 1968 N. E. Code 430-52

RECOMMENDED TRIP RATINGS FOR ADJUSTABLE MAGNETIC TRIP ONLY CIRCUIT BREAKERS*

Motor HP Rating 3 ϕ	230 Volts										460 Volts										575 Volts									
	Circuit Breaker Characteristics										Circuit Breaker Characteristics										Circuit Breaker Characteristics									
	N.E.C. Motor Full Load Current FLI▲	Maximum Contin- uous Amp. Rating	Magnetic Trip Range	Adjustable Magnetic Trip Set Point† for —			N.E.C. Motor Full Load Current FLI▲	Maximum Contin- uous Amp. Rating	Magnetic Trip Range	Ap- prox. 700% of FLI	Ap- prox. 1100% of FLI	Ap- prox. 1300% of FLI	N.E.C. Motor Full Load Current FLI▲	Maximum Contin- uous Amp. Rating	Magnetic Trip Range	Ap- prox. 700% of FLI	Ap- prox. 1100% of FLI	Ap- prox. 1300% of FLI	N.E.C. Motor Full Load Current FLI▲	Maximum Contin- uous Amp. Rating	Magnetic Trip Range	Ap- prox. 700% of FLI	Ap- prox. 1100% of FLI	Ap- prox. 1300% of FLI	N.E.C. Motor Full Load Current FLI▲	Maximum Contin- uous Amp. Rating	Magnetic Trip Range	Ap- prox. 700% of FLI	Ap- prox. 1100% of FLI	Ap- prox. 1300% of FLI
				Ap- prox. 700% of FLI	Ap- prox. 1100% of FLI	Ap- prox. 1300% of FLI																								
1/4	1.1	2	5-25	2	3	4	0.6	2	5-25	LO	LO	2	0.5	2	5-25	LO	LO	LO	0.65	2	5-25	LO	LO	LO	0.5	2	5-25	LO	LO	LO
1/2	1.5	2	5-25	2	4	5	0.8	2	5-25	LO	LO	2	0.75	2	5-25	LO	LO	LO	0.8	2	5-25	LO	LO	LO	0.75	2	5-25	LO	LO	LO
3/4	2	2	5-25	2	6	HI	1	2	5-25	LO	LO	2	1	2	5-25	LO	LO	LO	1	2	5-25	LO	LO	LO	1	2	5-25	LO	LO	LO
1	2.8	4	12-60	2	3	4	1.4	2	5-25	3	4	5	1.1	2	5-25	2	3	4	1.1	2	5-25	2	3	4	1.1	2	5-25	2	3	4
1 1/2	3.6	4	12-60	3	4	5	1.8	2	5-25	3	5	6	1.4	2	5-25	3	5	6	1.4	2	5-25	3	5	6	1.4	2	5-25	3	5	6
2	5.2	8	25-125	2	3	4	2.6	4	12-60	2	3	4	2.1	4	12-60	2	3	4	2.1	4	12-60	2	3	4	2.1	4	12-60	2	3	4
3	6.8	8	25-125	3	4	5	3.4	4	12-60	3	4	5	2.7	4	12-60	3	4	5	2.7	4	12-60	3	4	5	2.7	4	12-60	3	4	5
4	9	15	50-250	2	3	4	4.8	8	25-125	2	3	4	3.9	8	25-125	2	3	4	3.9	8	25-125	2	3	4	3.9	8	25-125	2	3	4
5	15.2	30	100-400	LO	2	3	7.6	8	25-125	3	4	5	6.1	8	25-125	3	4	5	6.1	8	25-125	3	4	5	6.1	8	25-125	3	4	5
7 1/2	22	30	100-400	2	4	5	11	15	50-250	2	3	4	9	15	50-250	2	3	4	9	15	50-250	2	3	4	9	15	50-250	2	3	4
10	28	40	160-500	2	4	5	14	15	50-250	3	4	5	11	15	50-250	3	4	5	11	15	50-250	3	4	5	11	15	50-250	3	4	5
15	42	70	250-750	2	3	5	21	30	100-400	2	4	5	17	30	100-400	2	4	5	17	30	100-400	2	3	4	17	30	100-400	2	3	4
20	54	70	250-750	3	4	HI	27	40	160-500	2	3	4	22	30	160-500	2	3	4	22	30	160-500	2	3	4	22	30	160-500	2	3	4
25	68	100	450-1000	LO	4	5	34	40	160-500	4	6	HI	27	40	160-500	4	6	HI	27	40	160-500	4	6	HI	27	40	160-500	4	6	HI
30	80	100	450-1000	2	5	HI	40	70	250-750	LO	3	4	32	40	160-500	LO	3	4	32	40	160-500	LO	3	4	32	40	160-500	LO	3	4
40	104	150	750-1500	LO	4	6	52	70	250-750	3	5	6	41	70	250-750	LO	4	5	41	70	250-750	LO	3	4	41	70	250-750	LO	3	4
50	130	200	1000-2000	LO	3	5	65	100	450-1000	LO	4	5	52	70	250-750	2	5	6	52	70	250-750	2	5	6	52	70	250-750	2	5	6
60	154	250	1250-2500	LO	3	HI	77	125	625-1250	LO	3	5	62	125	625-1250	LO	3	5	62	125	625-1250	LO	3	5	62	125	625-1250	LO	3	5
75	192	250	1250-2500	LO	4	HI	96	125	625-1250	LO	5	HI	77	125	625-1250	LO	5	HI	77	125	625-1250	LO	4	5	77	125	625-1250	LO	4	5
100	248	350	1750-3500	LO	3	4	124	175	875-1750	LO	4	5	99	175	875-1750	LO	4	5	99	175	875-1750	LO	3	4	99	175	875-1750	LO	3	4
125	312	500	2500-5000	LO	2	4	156	200	1000-2000	LO	4	HI	125	200	1000-2000	LO	4	HI	125	200	1000-2000	LO	2	3	125	200	1000-2000	LO	2	3
150	360	500	2500-5000	LO	3	HI	180	225	1125-2250	LO	4	HI	144	225	1125-2250	LO	4	HI	144	225	1125-2250	LO	3	4	144	225	1125-2250	LO	3	4
200	480	700	3500-7000	LO	3	HI	240	350	1750-3500	LO	3	4	192	300	1500-3000	LO	3	4	192	300	1500-3000	LO	3	4	192	300	1500-3000	LO	3	4
250	600	800	4000-8000	LO	3	HI	300	500	2500-5000	LO	2	3	240	500	2500-5000	LO	2	3	240	500	2500-5000	LO	LO	LO	240	500	2500-5000	LO	LO	LO
300	720	1000	5000-10000	LO	3	HI	360	500	2500-5000	LO	3	4	290	500	2500-5000	LO	3	4	290	500	2500-5000	LO	2	3	290	500	2500-5000	LO	2	3
350	840	1000	5000-10000	LO	3	HI	420	600	3000-6000	LO	3	4	335	600	3000-6000	LO	3	4	335	600	3000-6000	LO	2	3	335	600	3000-6000	LO	2	3
400	960	1000	5000-10000	LO	3	HI	480	600	3000-6000	LO	2	4	385	600	3000-6000	LO	2	4	385	600	3000-6000	LO	LO	LO	385	600	3000-6000	LO	LO	LO
450	1080	1000	5000-10000	LO	3	HI	540	700	3500-7000	LO	4	HI	430	700	3500-7000	LO	4	HI	430	700	3500-7000	LO	LO	LO	430	700	3500-7000	LO	LO	LO
500	1200	1000	5000-10000	LO	3	HI	600	800	4000-8000	LO	4	HI	480	800	4000-8000	LO	4	HI	480	800	4000-8000	LO	LO	LO	480	800	4000-8000	LO	LO	LO
600	1440	1000	5000-10000	LO	3	HI	720	1000	5000-10000	LO	3	4	575	1000	5000-10000	LO	3	4	575	1000	5000-10000	LO	LO	LO	575	1000	5000-10000	LO	LO	LO

The 1968 National Electric Code requires that magnetic starters used in combination with adjustable magnetic trip only circuit breakers have an overload relay in each conductor.

*This table is for molded case adjustable magnetic trip only circuit breakers when used in combinations with magnetic starters. Table is suitable for single speed or multi-speed motors (constant or variable torque), line voltage or autotransformer start. For recommendations for constant horsepower multi-speed motors consult local Square D Field Office. These recommended trip ratings are approximate for average conditions and based on 1968 National Electric Code requirements for squirrel cage motors without code letters or with code letters B to E inclusive. Lower trip ratings may be required for motors with code letter A and higher trip ratings for motors with code letters F to V inclusive. Local codes or specific application requirements may necessitate special selection.

†Refer to Page 45 for catalog numbers and prices.

†FA and KA frame circuit breakers each have 7 set points known in ascending order as LO, 2, 3, 4, 5, 6 and HI. The LA and MA frames each have 5 set points known in ascending order as LO, 2, 3, 4 and HI. The approximate trip current at each intermediate set point can be calculated by assuming each set point increase represents 1/6th of the whole trip range for FA and KA frame circuit breakers and 1/4th of the whole range for LA and MA frame circuit breakers. The user is reminded of the 700% and 1300% of FLI set point limits as outlined in the 1968 N.E.C. in tables 430-152, 430-153, and exceptions in section 430-52. Set points for the 700% and 1300% limits are also given in the above table.

▲Values through 200 HP are taken from the 1968 National Electric Code. Above 200 HP, current values are calculated to be proportional to those at 200 HP (to nearest multiple of 5 Amperes).

NOTE: Adjustable magnetic-only circuit breakers will carry continuous current ratings indefinitely. Caution: A breaker may be damaged by currents larger than its continuous rating but smaller than the value shown in the above table for its trip setting if these currents are allowed to continue for long lengths of time. For example, a 2 ampere adjustable magnetic-only circuit breaker with the trip set at 4 could be damaged while carrying 3 amperes. Breakers must be selected according to their continuous ratings.

Front Adjustable
Magnetic Trip Only
FA 100A. Frame



SELECTION TABLES

MOTOR BRANCH CIRCUITS BY HORSEPOWER

1968 NEC ARTICLE 430 — Paragraph 430-22 Single Motor

MOTOR		WIRE & CONDUIT				SWITCH		BREAKER		
HP	* FLA	60° RUW, TW		75° RHW, THW		Fuse Type		Square D		
		Wire	Cond.	Wire	Cond.	N.E.C.	Time Delay	Trip-Type	Mag. Set	

THREE PHASE — 230/60

For 208 V. — Increase FLA 10%
For 200 V. — Increase FLA 15%

1/2	2	14	1/2	14	1/2	30	30	15 FA-A1	..	..
3/4	2.8	14	1/2	14	1/2	30	30	15 FA-A1	..	..
1	3.6	14	1/2	14	1/2	30	30	15 FA-A1	..	..
1-1/2	5.2	14	1/2	14	1/2	30	30	15 FA-A1	..	..
2	6.8	14	1/2	14	1/2	30	30	15 FA-A1	..	..
3	9.6	14	1/2	14	1/2	30	30	20 FA-A1	..	..
5	15.2	12	1/2	12	1/2	60	30	30 FA-A1	..	..
7-1/2	22	10	3/4	10	3/4	60	▲ 60	50 FA-A1	..	..
10	28	8	1	8	1	100	60	60 FA-A1	..	..
15	42	6	1 1/4	6	1 1/4	100	60	90 FA-A1	..	..
20	54	4	1 1/2	4	1 1/2	200	100	100 FA-A1	..	..
25	68	2	1 3/4	4	1 3/4	200	100	100 FA-A1	..	..
30	80	1	1 3/4	3	1 3/4	400	▲ 200	125 KA	3	..
40	104	..	..	1	1 1/2	400	200	150 KA	4	..
50	130	..	..	2/0	2	400	200	200 KA	3	..
60	154	..	..	3/0	2	600	▲ 400	250 LA	3	..
75	192	..	..	250	2 1/2	600	400	250 LA	4	..
100	248	..	..	350	3	800	400	350 LA	3	..
125	312	..	..	2-3/0	2-2	..	▲ 600	500 MA	2	..
150	360	..	..	2-4/0	2-2 1/2	..	600	500 MA	3	..
200	480	..	..	2-350	2-3	..	600	700 MA	3	..

1/2	1	14	1/2	14	1/2	30	30	15 FA	..	..
3/4	1.4	14	1/2	14	1/2	30	30	15 FA	..	..
1	1.8	14	1/2	14	1/2	30	30	15 FA	..	..
1-1/2	2.6	14	1/2	14	1/2	30	30	15 FA	..	..
2	3.4	14	1/2	14	1/2	30	30	15 FA	..	..
3	4.8	14	1/2	14	1/2	30	30	15 FA	..	..
5	7.6	14	1/2	14	1/2	30	30	15 FA	..	..
7-1/2	11	14	1/2	14	1/2	60	30	20 FA	..	..
10	14	12	1/2	12	1/2	60	30	30 FA	..	..
15	21	10	3/4	10	3/4	60	30	40 FA	..	..
20	27	8	1	8	1	100	60	50 FA	..	..
25	34	6	1 1/4	6	1 1/4	100	60	60 FA	..	..
30	40	4	1 1/2	6	1 1/2	200	60	70 FA	..	..
40	52	2	1 3/4	6	1 3/4	200	100	90 FA	..	..
50	65	2	1 3/4	4	1 1/4	200	100	100 FA	..	..
60	77	1	1 3/4	3	1 1/4	400	▲ 200	125 KA	3	..
75	96	..	..	1	1 1/2	400	400	125 KA	3	..
100	124	..	..	2/0	2	400	400	175 KA	4	..
125	156	..	..	3/0	2	400	400	200 LA	4	..
150	180	..	..	4/0	2 1/2	600	400	225 LA	4	..
200	240	..	..	350	3	600	400	350 LA	3	..

1/2	.8	14	1/2	14	1/2	30	30	15 FA	..	..
3/4	1.1	14	1/2	14	1/2	30	30	15 FA	..	..
1	1.4	14	1/2	14	1/2	30	30	15 FA	..	..
1-1/2	2.1	14	1/2	14	1/2	30	30	15 FA	..	..
2	2.7	14	1/2	14	1/2	30	30	15 FA	..	..
3	3.9	14	1/2	14	1/2	30	30	15 FA	..	..
5	6.1	14	1/2	14	1/2	30	30	15 FA	..	..
7-1/2	9	14	1/2	14	1/2	30	30	20 FA	..	..
10	11	14	1/2	14	1/2	60	30	30 FA	..	..
15	17	10	3/4	10	3/4	60	30	40 FA	..	..
20	22	10	3/4	10	3/4	100	▲ 60	50 FA	..	..
25	27	8	1	8	1	100	60	60 FA	..	..
30	32	8	1	8	1	100	60	70 FA	..	..
40	41	6	1 1/4	6	1 1/4	200	60	90 FA	..	..
50	52	4	1 1/2	6	1 1/2	200	100	100 FA	..	..
60	62	3	1 3/4	4	1 3/4	400	400	125 KA	3	..
75	77	1	1 3/4	3	1 3/4	400	400	125 KA	3	..
100	99	..	..	1	1 1/2	400	400	175 KA	2	..
125	125	..	..	2/0	2	400	400	200 KA	2	..
150	144	..	..	3/0	2	400	400	225 KA	3	..
200	192	..	..	250	2 1/2	600	400	300 LA	3	..

*Motor full load currents are taken from Tables 430-147, 148 and 150 of the 1968 NEC. Do not use these values to select overload relay thermal units. See pages 226, 227 and 228 for selection of thermal units when actual full load current is not known. The voltages listed are rated motor voltages. Corresponding nominal system voltages are 110 to 120, 220 to 240, 440 to 480 and 550 to 600 volts.

▲ Next size smaller switch can be used for normal or light starting duty. However, under many conditions, switch size indicated may be necessary to accommodate fuses large enough to start motor. Use next size smaller if selecting non-fusible switch.

✱ Size of switch only is shown in tables above. Fuses should be selected not to exceed maximum per cent of full-load current as given in 1968 NEC Tables 430-152 or 430-153. Above 100 horsepower AC or 50 horsepower DC switches are not horsepower rated by UL as Motor Circuit Switches, but as General Use Switches only and are not necessarily capable of interrupting the maximum operating overload current of a motor. See 1968 NEC Article 100 for definition of General Use Switch.

Isolation switches for motors exceeding 50 horsepower, not capable of interrupting stalled-rotor currents, shall be plainly marked after installation "Do not open under load" per 1968 NEC 430-109 Exception 4.

Not-fusible switches carry equivalent horsepower ratings to Underwriter's ratings shown for time delay fusing.

Ⓢ Thermal-Magnetic Breaker recommended trip ratings are approximate for average conditions and based on trip characteristics of Square D breakers and 1968 NEC Tables 430-152 and 430-153 for Time Limit C/B requirements for squirrel cage motors without code letters or

MOTOR		WIRE & CONDUIT				SWITCH		BREAKER		
HP	* FLA	60° RUW, TW		75° RHW, THW		Fuse Type		Square D		
		Copper Wire	Cond.	Copper Wire	Cond.	N.E.C.	Time Delay	Trip-Type	Mag. Set	

SINGLE PHASE — 115/60

For 208 V. — Increase FLA 10%
For 200 V. — Increase FLA 15%

1/6	4.4	14	1/2	14	1/2	30	30	15 FA-A1	..	..
1/4	5.8	14	1/2	14	1/2	30	30	15 FA-A1	..	..
1/3	7.2	14	1/2	14	1/2	30	30	15 FA-A1	..	..
1/2	9.8	14	1/2	14	1/2	30	30	20 FA-A1	..	..
3/4	13.8	12	1/2	12	1/2	60	30	30 FA-A1	..	..
1	16	12	1/2	12	1/2	60	30	40 FA-A1	..	..
1-1/2	20	10	3/4	10	3/4	60	30	40 FA-A1	..	..
2	24	10	3/4	10	3/4	100	60	50 FA-A1	..	..
3	34	6	1	8	1	100	60	70 FA-A1	..	..
5	56	4	1 1/4	4	1 1/4	200	100	100 FA-A1	..	..
7-1/2	20	10	3/4	10	3/4	60	30	40 FA-A1	..	..
10	24	10	3/4	10	3/4	100	60	50 FA-A1	..	..
15	42	6	1 1/4	6	1 1/4	100	60	90 FA-A1	..	..
20	54	4	1 1/2	4	1 1/2	200	100	100 FA-A1	..	..
25	68	2	1 3/4	4	1 3/4	200	100	100 FA-A1	..	..
30	80	1	1 3/4	3	1 3/4	400	▲ 200	125 KA	3	..
40	104	..	..	1	1 1/2	400	200	150 KA	4	..
50	130	..	..	2/0	2	400	200	200 KA	3	..
60	154	..	..	3/0	2	600	▲ 400	250 LA	3	..
75	192	..	..	250	2 1/2	600	400	250 LA	4	..
100	248	..	..	350	3	800	400	350 LA	3	..
125	312	..	..	2-3/0	2-2	..	▲ 600	500 MA	2	..
150	360	..	..	2-4/0	2-2 1/2	..	600	500 MA	3	..
200	480	..	..	2-350	2-3	..	600	700 MA	3	..

1/6	2.2	14	1/2	14	1/2	30	30	15 FA-A1	..	..
1/4	2.9	14	1/2	14	1/2	30	30	15 FA-A1	..	..
1/3	3.6	14	1/2	14	1/2	30	30	15 FA-A1	..	..
1/2	4.9	14	1/2	14	1/2	30	30	15 FA-A1	..	..
3/4	6.9	14	1/2	14	1/2	30	30	15 FA-A1	..	..
1	8	14	1/2	14	1/2	30	30	20 FA-A1	..	..
1-1/2	10	14	1/2	14	1/2	30	30	20 FA-A1	..	..
2	12	14	1/2	14	1/2	60	30	30 FA-A1	..	..
3	17	10	3/4	10	3/4	60	30	40 FA-A1	..	..
5	28	8	1	8	1	100	60	60 FA-A1	..	..
7-1/2	40	6	1 1/4	6	1 1/4	100	60	90 FA-A1	..	..
10	50	4	1 1/2	6	1 1/2	200	60	100 FA-A1	..	..

1/4	2.9	14	1/2	14	1/2	30	30	15 FA-A1	..	..
1/3	3.6	14	1/2	14	1/2	30	30	15 FA-A1	..	..
1/2	5.2	14	1/2	14	1/2	30	30	15 FA-A1	..	..
3/4	7.4	14	1/2	14	1/2	30	30	15 FA-A1	..	..
1	9.4	14	1/2	14	1/2	30	30	15 FA-A1	..	..
1-1/2	13.2	12	1/2	12	1/2	30	30	20 FA-A1	..	..
2	17	10	3/4	10	3/4	30	30	30 FA-A1	..	..
3	25	8	1	8	1	60	60	40 FA-A1	..	..
5	40	6	1 1/4	6	1 1/4	60	60	60 FA-A1	..	..
7-1/2	58	3	1 1/2	4	1 1/2	100	100	100 FA-A1	..	..
10	76	2	1 3/4	3	1 3/4	200	▲ 200	125 KA	..	..

DIRECT CURRENT — 250 VOLTS										
1/4	1.5	14	1/2	14	1/2	30	30	15 FA	..	..
1/3	1.8	14	1/2	14	1/2	30	30	15 FA	..	..
1/2	2.6	14	1/2	14	1/2	30	30	15 FA	..	..
3/4	3.7	14	1/2	14	1/2	30	30	15 FA	..	..
1	4.7	14	1/2	14	1/2	30	30	15 FA	..	..
1-1/2	6.6	14	1/2	14	1/2	30	30	15 FA	..	..
2	8.5	14	1/2	14	1/2	30	30	15 FA	..	..
3	12.2	12	3/4	12	3/4	30	30	20 FA	..	..
5	20	10	1	10	1	30	30	30 FA	..	..
7-1/2	29	8	3/4	8	3/4	60	60	50 FA	..	..
10	38	6	1	6	1	60	60	60 FA	..	..
15	55	4	1 1/4	4	1 1/4	100	100	100 FA	..	..
20	72	2	1 1/2	2	1 1/2	200	▲200	125 KA	..	..
25	89	...	1 3/4	2	1 3/4	200	200	150 KA	..	..
30	106	...	...	0	1 1/2	200	200	175 KA	..	..
40	140	...	...	2/0	2	400	▲400	225 KA	..	..
50	173	...	...	4/0	2	400	400	300 LA	..	..
60	206	...	...	3/00	2 1/2	400	400	350 LA	..	..
75	255	...	...	400	3	400	400	400 LA	..	..
100	341	...	...	2-4/0	2-2	600	600	600 MA	..	..
125	425	...	...	2-3/00	2-2 1/2	...	600	700 MA	..	..
150	505	...	...	2-400	2-3	...	...	800 MA	..	..
200	675	...	...	3-300	3-2 1/2	...	...	1000 MA	..	..



CONDITIONS OF SALE

- 1. ACCEPTANCE, GOVERNING PROVISIONS, AND CANCELLATIONS.** No order for Square D equipment or services shall be binding upon Square D until accepted in writing by an authorized official of Square D. Any such order shall be subject to these Conditions of Sale, and acceptance shall be conditioned on assent to such Conditions, which assent shall be deemed given unless purchaser shall expressly notify Square D to the contrary within five days after receipt of acknowledgment or confirmation of an order and in all events prior to any delivery or other performance of such order.

No order accepted by Square D may be altered or modified by purchaser unless agreed to in a writing signed by an authorized official of Square D; and no such order may be cancelled or terminated except upon payment of Square D's loss, damage and expense arising from such cancellation or termination.

No modified or other conditions will be recognized by Square D unless specifically agreed to in writing and failure of Square D to object to provisions contained in any purchase order or other communication from a purchaser (including, without limitation, penalty clauses of any kind) shall not be construed as a waiver of these Conditions nor an acceptance of any such provisions.

Any contract for sale and these Conditions shall be governed by and construed according to the laws of the State of Illinois.

- 2. QUOTATIONS AND PRICES.** Written quotations automatically expire thirty (30) calendar days from the date issued unless sooner terminated by notice. Square D publications are maintained as sources of general information and are not quotations or offers to sell.

All prices are subject to change without notice. In the event of a net price change, the price of equipment on order but unshipped will be adjusted to the price in effect at the time of shipment. In no case will an upward adjustment of the price at which the order was accepted exceed 10% for each year or part thereof during which the equipment remains on order but unshipped. Downward adjustment of prices shall apply only to unshipped portions of outstanding orders.

Orders amounting to less than \$10.00 net will be billed at \$10.00.

All clerical errors are subject to correction.

- 3. PAYMENT TERMS.** Terms of payment to purchasers of satisfactory credit are as follows:

Industrial Control and Commercial Control Equipment — Net invoice amount due 30 days after invoice date, except that terms are 2% cash discount for payment by the 10th proximo and net invoice amount for payment by the 25th proximo on the following classes:

Schedule DS-1	Standard Motor Control and Industrial Pressure Switches, Temperature Switches, Float Switches, and Solenoid Valves
Schedule DS-2	Motor Control Centers and Special Purpose Control Panels
Schedule DS-5	Terminal Blocks
Schedule DS-6	Irrigation Pump Control
Schedule DS-14	Replacement Parts
Schedule DS-15	Replacement Parts
Schedule X	Commercial Control Switches

Distribution Equipment — 2% cash discount for payment by the 10th proximo and net invoice amount for payment by the 25th proximo, except that terms are net 30 days after invoice date on the following classes:

Schedule D	Large Air Circuit Breakers
Schedule F	Switchgear

Invoices will be submitted as partial shipments are made.

Square D reserves the right at any time to demand full or partial payment before proceeding with a contract of sale if, in its judgment, the financial condition of purchaser shall not justify the terms of payment specified. If delivery is delayed or deferred by purchaser beyond the scheduled date, payment shall be due in full when Square D is prepared to ship and the equipment may be stored at the risk and expense of purchaser. If purchaser defaults when any payment is due, then the whole contract price shall become due and payable upon demand, or Square D, at its option, without prejudice to other lawful remedies, may defer delivery or cancel the contract for sale.

- 4. TAXES AND OTHER CHARGES.** Any manufacturer's tax, retailer's occupation tax, use tax, sales tax, excise tax, duty, custom, inspection or testing fee, or other tax, fee or charge of any nature whatsoever, imposed by any governmental authority, on or measured by any transaction between Square D and purchaser, shall be paid by purchaser in addition to the prices quoted or invoiced. In the event Square D shall be required to pay any such tax, fee or charge, purchaser shall reimburse Square D therefor, or, in lieu of such payment, purchaser shall provide Square D at the time the order is submitted with an exemption certificate or other document acceptable to the authority imposing the same. Purchase orders must state the existence and amount of any such tax, fee or charge which it shall be Square D's responsibility to collect from purchaser and pay.

- 5. DELIVERY.** Delivery of equipment to a carrier at any Square D plant or other shipping point shall constitute delivery to purchaser; and, regardless of freight payment, title and all risk of loss or damage in transit shall pass to purchaser at that time.

*Great care is taken in packing Square D equipment. Square D cannot be held responsible for breakage after having received "in good order" receipts from the transportation company. All claims for loss and damage must be made by purchaser to the carrier.

Claims for shortages or other errors must be made in writing to Square D within 30 days after receipt of shipment, and failure to give such notice shall constitute unqualified acceptance and a waiver of all such claims by purchaser.

On shipments within **THE UNITED STATES EXCLUDING ALASKA AND HAWAII**, freight will be allowed to any common carrier free delivery point, except that such freight will be prepaid but not allowed on shipments of distribution equipment having a total list price of less than One Thousand Dollars (\$1,000).

On shipments to **ALASKA AND HAWAII**, freight will be allowed to dock-side at the listed port (consult a Square D field office for current publication showing listed ports) nearest the point of destination, except that such freight will be prepaid but not allowed on shipments of any equipment having a total list price of less than One Thousand Dollars (\$1,000), and except that purchaser shall pay all special costs such as cartage, stevedoring and insurance.

On shipments to **ANY OTHER DESTINATION**, freight will be allowed to the common carrier free delivery point in the United States nearest the original port of embarkation, except that such freight will be prepaid but not allowed on shipments of any equipment having a total list price of less than One Thousand Dollars (\$1,000), and except that purchaser shall pay all special costs such as cartage, stevedoring and insurance.

No allowance will be made in lieu of transportation if purchaser accepts shipment at factory, warehouse, freight station, or otherwise supplies its own transportation.

Method and route of shipment will be at the discretion of Square D unless purchaser shall specify otherwise, and any additional expense of the method or route of shipment specified by purchaser shall be borne by purchaser.

Square D reserves the right to make delivery in installments, unless otherwise expressly stipulated in the contract for sale; and all such installments when separately invoiced shall be paid for when due per invoice, without regard to subsequent deliveries. Delay in delivery of any installment shall not relieve purchaser of its obligations to accept remaining deliveries. Square D shall not be liable for any damage as a result of any delay due to any cause beyond Square D's reasonable control, including, without limitation, an act of God, act of purchaser, embargo or other governmental act, regulation or request; fire; accident; strike; slow-down; war; riot; delay in transportation; and inability to obtain necessary labor, materials or manufacturing facilities. In the event of any such delay, the date of delivery shall be extended for a period equal to the time lost by reason of the delay.

- 6. SUBSTITUTES.** Square D may furnish suitable substitutes for materials unobtainable because of priorities or regulations established by governmental authority or non-availability of materials from suppliers.

- 7. WARRANTIES.** Square D warrants equipment manufactured by it to be free from defects in materials and workmanship for a period of one (1) year from date of shipment by Square D. If within such period any such equipment shall be proved to Square D's satisfaction to be so defective, such equipment shall be repaired or replaced at Square D's option. This warranty shall not apply (a) to equipment not manufactured by Square D, (b) to equipment which shall have been repaired or altered by others than Square D so as, in its judgment, to affect the same adversely, or (c) to equipment which shall have been subjected to negligence, accident, or damage by circumstances beyond Square D's control, or to improper operation, maintenance or storage, or to other than normal use or service. With respect to equipment not manufactured by Square D, the warranty obligations of Square D shall in all respects conform and be limited to the warranty actually extended to Square D by its supplier.

THE FOREGOING WARRANTIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER EXPRESS AND IMPLIED WARRANTIES WHATSOEVER, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE (except warranties of title). Square D shall not be subject to any other obligations or liabilities whatsoever with respect to equipment manufactured by Square D or services rendered by Square D.

- 8. CONSEQUENTIAL DAMAGES.** Anything to the contrary herein contained notwithstanding, Square D shall not be liable for any consequential, contingent or incidental damages whatsoever.

- 9. RETURN OF EQUIPMENT.** No equipment may be returned without first obtaining Square D's written permission and a returned material identification tag.

Equipment accepted for credit, not involving a Square D error, shall be subject to a minimum service charge of 10% of the invoice price and all transportation charges shall be prepaid by purchaser.

Returned equipment must be securely packed to reach Square D without damage; any cost incurred by Square D to put equipment in first class condition will be charged to purchaser.

- 10. PATENTS.** As to equipment proposed and furnished by Square D, Square D shall defend any suit or proceeding brought against purchaser so far as based on a claim that said equipment constitutes an infringement of any patent of the United States, if notified promptly in writing and given authority, information, and assistance at Square D's expense for the defense of the same. In event of a final award of costs and damages, Square D shall pay such award. In event the use of said equipment by purchaser is enjoined in such a suit, Square D shall, at its own expense, either (a) procure for purchaser the right to continue using said equipment, (b) modify said equipment to render it non-infringing, (c) replace said equipment with non-infringing equipment, or (d) refund the purchase price and the transportation and installation costs of said equipment. Square D will not be responsible for any compromise or settlement made without its written consent.

The foregoing states the entire liability of Square D for patent infringement, and in no event shall Square D be liable if the infringement charge is based on the use of Square D equipment for a purpose other than that for which sold by Square D. As to any equipment furnished by Square D to purchaser and manufactured in accordance with designs proposed by purchaser, purchaser shall indemnify Square D against any award made against Square D for patent, trademark, or copyright infringements.

(Rev. 1/70)

*Changed since issue of 2/69

NOTE: All Sales Transactions are subject to the latest published Conditions of Sale of the Square D Company



1968 NATIONAL ELECTRICAL CODE — WIRE & CONDUIT TABLES

Table 310-12. Allowable Ampacities of Insulated Copper and 310-14 Aluminum Conductors.

Not More than Three Conductors in Raceway or Cable or Direct Burial
(Based on Ambient Temperature of 30° C. 86° F.)

Temperature Rating of Conductor. See Table 310-2(a).

The following branch circuit conductor insulations are rated for:

60 C. — Types RF-2, FF-2, TF, TFF, RUW (14-2), T, TW, MTW

75 C. — Types RFH-2, RH, RHW, RUH (14-2), THW, THWN, XHHW, THW-MTW

85-90 C. — Types RHH, THHN, XHHW, MI, SA, FEP, V, AVB, FEPB, MTW.

(Dry Locations only — Insulations listed above are designated by underlining.)

Table 1. Maximum Number of Conductors in Trade Sizes of Conduit or Tubing — New Work

Types RF-2, RFH-2, RH, RHH, RHW, RUH, RUW, T, TF, THW, TW, XHHW (14 thru 6), FEPB (6 thru 2).

Types FEP, THHN, THWN, PF, PGF, XHHW (AWG 4 thru 2000 MCM) FEPB (AWG 14 thru 8)
(Refer to shaded area in Table Below.)

Derating factors for more than three conductors in raceways, see Notes 8 & 11, Tables 310-12 through 310-15.

New Work — When conductors are all the same size, use Tables 1 and 2 of Chapter 9. When conductors of various sizes are to be used in combination, use Tables 3 and 4 of Chapter 9 and the dimensions by area of Table 5 of Chapter 9.

Size AWG MCM	Copper			Aluminum			1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	6
	60 C. (140 F.)	75 C. (167 F.)	85-90 C. (185 F.)	60 C. (140 F.)	75 C. (167 F.)	85-90 C. (185 F.)	Inch	Inch	Inch	Inch	Inch	Inch	Inch	Inch	Inch	Inch	Inch	Inch	Inch
18							7	13	20	35	49	80	114	176					
							11	20	33	58	80	131	187						
16							6	10	17	30	41	68	98	150					
							9	16	27	47	64	106	151						
14	15	15	† 25				4	6	10	18	25	41	58	90	121	155	197		
							8	15	24	43	58	96	137						
12	20	20	† 30	15	15	‡ 25	3	5	8	15	21	34	50	76	103	138	168		
							6	11	18	32	43	71	102	158					
10	30	30	† 40	25	25	‡ 30	1	4	7	13	17	29	41	64	86	110	140	173	
							4	7	11	20	27	45	65	100	134	172			
8	40	45	50	30	40	40	1	3	4	7	10	17	25	38	52	67	85	105	132
							2	4	6	11	16	26	37	58	78	100	127	157	
6	55	65	70	40	50	55	1	1	3	4	6	10	15	23	32	41	52	64	81
							1	2	4	7	9	16	23	35	47	61	78	96	139
4	70	85	90	55	65	70	1	1	1	3	5	8	12	18	24	31	40	49	72
							1	1	2	4	6	9	14	21	29	37	48	59	85
3	80	100	105	65	75	80		1	1	3	4	7	10	16	21	28	35	44	63
								1	2	3	5	8	12	18	24	31	40	50	72
2	95	115	120	75	▲ 90	95		1	1	3	3	6	9	14	19	24	31	38	55
								1	1	3	4	7	10	15	20	26	34	42	61
1	115	130	140	85	▲ 100	110		1	1	1	3	4	7	10	14	18	23	28	42
								1	1	2	3	5	7	11	15	20	25	31	45
0	125	150	155	100	▲ 120	125			1	1	2	4	6	9	12	16	20	26	37
									1	2	2	4	6	9	13	16	21	26	38
00	145	175	185	115	▲ 135	145			1	1	1	3	5	8	11	14	18	22	32
									1	1	2	3	5	8	11	14	18	22	32
000	165	200	210	130	▲ 155	165			1	1	1	3	4	7	9	12	15	19	27
									1	1	1	3	4	7	9	12	15	19	27
0000	195	230	235	155	▲ 180	185			1	1	1	2	3	6	8	10	13	16	23
									1	1	1	2	3	6	8	10	13	16	23
250	215	255	270	170	205	215			1	1	1	3	5	6	8	11	13	19	
									1	1	1	2	3	5	6	8	11	13	19
300	240	285	300	190	230	240			1	1	1	3	4	5	7	9	11	16	
									1	1	1	3	4	5	7	9	11	16	
350	260	310	325	210	250	260			1	1	1	3	4	5	6	8	10	15	
									1	1	1	2	3	5	6	8	10	15	
400	280	335	360	225	270	290			1	1	1	3	4	5	6	7	9	13	
									1	1	1	2	3	4	5	6	7	9	13
500	320	380	405	260	310	330			1	1	1	3	4	5	6	8	10	15	
									1	1	1	3	4	5	6	8	10	15	
600	355	420	455	285	340	370			1	1	1	3	4	5	6	8	10	15	
									1	1	1	3	4	5	6	8	10	15	
700	385	460	490	310	375	395			1	1	1	3	4	5	6	8	10	15	
									1	1	1	3	4	5	6	8	10	15	
750	400	475	500	320	385	405			1	1	1	3	4	5	6	8	10	15	
									1	1	1	3	4	5	6	8	10	15	
800	410	490	515	330	395	415			1	1	1	3	4	5	6	8	10	15	
									1	1	1	3	4	5	6	8	10	15	
900	435	520	555	355	435	455			1	1	1	3	4	5	6	8	10	15	
									1	1	1	3	4	5	6	8	10	15	
1000	455	545	585	375	445	480			1	1	1	3	4	5	6	8	10	15	
									1	1	1	3	4	5	6	8	10	15	

▲ For 3-wire, single phase service the allowable ampacity of RH, RHH, RHW and THW aluminum conductors shall be for sizes #2-100 Amp., #1-110 Amp., #1/0-125 Amp., #2/0-150 Amp., #3/0-170 Amp. and #4/0-200 Amp.

These ampacities relate only to conductors described in Table 310-2 (a).

† The ampacities for Types FEP, FEPB, RHH, THHN and XHHW conductors for sizes AWG 14, 12 and 10 shall be the same as designated for 75° C. conductors in this Table.

‡ The ampacities for Types RHH, THHN and XHHW conductors for sizes AWG 12 and 10 shall be the same as designated for 75° C. conductors in this Table.

8. **More Than Three Conductors in a Raceway or Cable.** Tables 310-12 and 310-14 give the allowable ampacities for not more than three conductors in a raceway or cable. Where the number of conductors in a raceway or cable exceeds three, the allowable ampacity of each conductor shall be reduced as shown following Table:

Number of Conductors	Per Cent of Values in Tables 310-12 and 310-14
4 to 6.....	80
7 to 24.....	70
25 to 42.....	60
43 and above.....	50

EXCEPTION NO. 1 — When conductors of different systems, as provided in Section 300-3, are installed in a common raceway, the derating factors shown at left apply to the number of Power and Lighting (Articles 210, 215, 220 and 230) conductors only.

EXCEPTION NO. 2 — The derating factors of Sections 210-23(b) and 220-2 (second paragraph) do not apply when the derating factors are also required.

11. **Neutral Conductor.** A neutral conductor which carries only the unbalanced current from other conductors, as in the case of normally balanced circuits of three or more conductors, shall not be counted in determining ampacities as provided in Note 8.

In a 3-wire circuit consisting of two phase wires and the neutral of a 4-wire, 3-phase WYE connected system, a common conductor carries approximately the same current as the other conductors and shall be counted in determining ampacities as provided in Note 8.

WHEREVER ELECTRICITY IS DISTRIBUTED AND CONTROLLED



Square D Everywhere ...

Square D Company enters the decade of the '70s with enthusiasm and optimism for continued growth and expansion.

New manufacturing facilities, expanded warehouse operations, broader lines of quality equipment, and more sophisticated systems of distribution are only a few of the contemplated future developments. Equipped with the finest marketing force in the electrical industry, the best distributor organization, and a team of qualified, loyal back-up people, we are in a position not only to accept but meet the demands and challenges of the 1970s.

You, your customers and your prospects can continue to depend on Square D ... wherever electricity is distributed and controlled.

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